IEI Technology Corp.

MODEL:

AFL-517A-GM45

High Performance Panel PC with Intel® Core™2 Duo CPU Fan less, Touch Screen, 802.11 b/g/n Wireless LAN, Gigabit Ethernet, HDMI, DisplayPort, USB, Audio, RS-232/422/485, SATA, RoHS Compliant, IP 64 Protection

User Manual

Rev. 2.10 – 12 October, 2011

RoHS Lead Free

Revision

Date	Version	Changes
12 October, 2011	2.10	Initial release

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Chapter

1

Introduction

1.1 Overview

Figure 1-1: AFL-517A-GM45 Flat Panel PC

The AFOLUX AFL-517A-GM45 is an Intel® Core™2 Duo T9400/T7500 or Intel® Celeron® M 575 powered all-in-one touch screen panel PCs with a rich variety of functions and peripherals connections. It is designed for easy and simplified integration into conference center, home automation, and building control applications.

An Intel® GM45 graphics memory controller hub (GMCH) coupled with an Intel® ICH9M input/output controller hub ensures optimal memory, graphics, and peripheral I/O support. The system comes with 1.0 GB or 2.0 GB of preinstalled DDR2 SDRAM and supports a maximum of 4.0 GB of DDR2 SDRAM ensuring smooth data throughputs with reduced bottlenecks and fast system access. The AFL-GM45 Series is also preinstalled with a DVD Combo drive and includes a bay for a 2.5” SATA2 HDD for data storage.

Two serial ports and four external USB 2.0 ports ensure simplified connectivity to a variety of external peripheral devices. Wireless LAN and dual RJ-45 Ethernet connectors ensure uninterrupted connection to an external LAN.

The AFL-517A-GM45 includes both audio and visual multimedia capabilities. All models have VGA, HDMI, and DisplayPort outputs for connecting another monitor to the system.

A rich high definition audio experience is supported through the HDMI, DisplayPort, and audio jack connections.

The AFL-517A-GM45 panel PC is an elegant yet sophisticated system that is as easily implemented in commercial, industrial, and corporate environments as the home.

1.1.1 Features

The AFL-517A-GM45 features the following:

- Intel® Core™2 Duo T9400/7500 or Intel® Celeron® M 575 processor
- Intel® GM45 + ICH9M chipset
- 1GB or 2GB DDR2 SDRAM preinstalled
- 802.11 b/g wireless module
- Four USB 2.0 ports
- Watchdog timer that triggers a system reset if the system hangs for some reason
- IP 64 compliant front panel
- Touch screen
- Bluetooth
- RoHS compliance

1.2 External Overview

The stylish AFL-517A-GM45 panel PC comprises of a screen, rear panel, top panel, bottom panel and two side panels (left and right). An ABS/PC plastic front frame surrounds the front screen. The rear panel provides screw holes for a wall-mounting bracket compliant with the VESA FDMI standard. An I/O interface panel on the bottom panel provides access to external interface connectors.

1.2.1 Front Panel

The front side of the AFL-517A-GM45 is a flat panel TFT LCD screen surrounded by an ABS/PC plastic frame. The top center has a power LED. The bottom includes a guide to the OSD keypad controls. Refer to **Figure 1-2**.

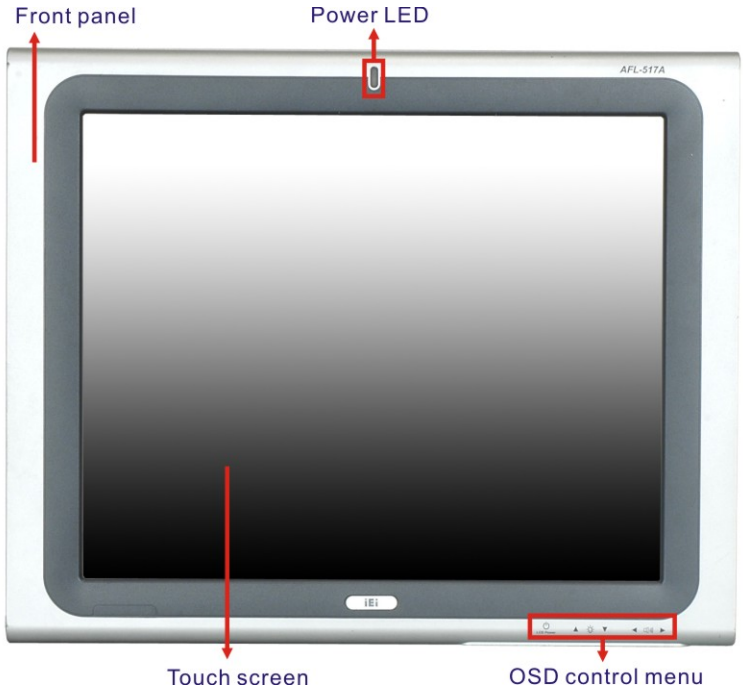


Figure 1-2: AFL-517A-GM45 Front View

1.2.2 Rear Panel

The rear panel provides access to the internal components of the POC-GM45 SERIES. Refer to **Figure 1-3** for back cover retention screw and VESA mount screw holes.

Figure 1-3: AFL-517A-GM45 Rear View

1.2.3 I/O Interface Panel

The I/O interface panel located on the bottom of the AFL-517A-GM45 has the following I/O interface connectors:

- 1 x 12 V DC-IN connector
- 1 x Audio line-in connector
- 2 x LAN connectors
- 1 x Power switch
- 1 x Reset button
- 1 x RS-232 serial port
- 1 x RS-232/422/485 serial port
- 1 x HDMI output port
- 1 x Display Port
- 1 x VGA port
- 4 x USB 2.0 ports

The external I/O interface connector panel is shown in below.

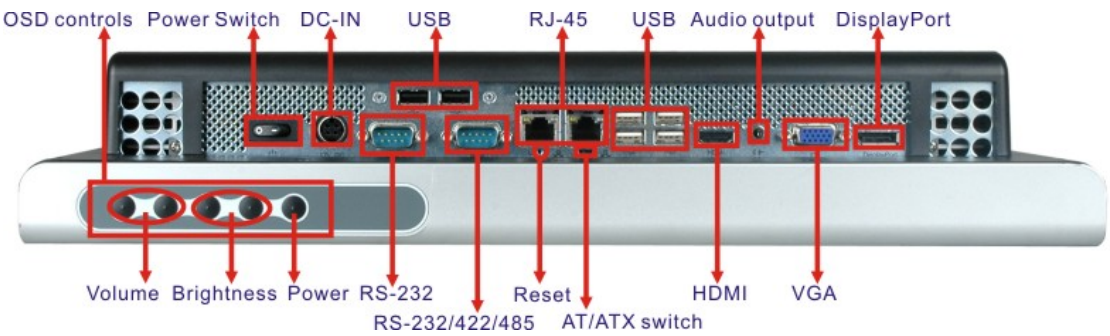


Figure 1-4: AFL-517A-GM45 I/O Interface Connector Panel

1.3 Internal Overview

All the components are contained under the rear panel. The internal components include the touch panel module and the motherboard. The motherboard has memory and a wireless LAN module. An HSDPA module is available preinstalled or as an optional add-on. The AFL-517A-GM45 includes a DVD Combo drive and bay for a 2.5" SATA HDD.

1.4 Model Variations

The AFL-517A-GM45 is available in the following model variations.

Model No.	CPU	Memory
AFL-517A-GM45-T94/R/D/2G-R21	Intel® Core™2 Duo T9400 2.53 GHz	2GB DDR2
AFL-517A-GM45-P84/R/D/2G-R21	Intel® Core™2 Duo P8400 2.53 GHz	2GB DDR2
AFL-517A-GM45-CM5/R/D/1G-R21	Intel® Celeron® M 575 2.0 GHz	1GB DDR2

Table 1-1: AFL-517A-GM45 Specifications

1.5 System Specifications

The technical specifications for the AFL-517A-GM45 systems are listed below.

Specifications	AFL-517A-GM45
LCD Size	17"
Max Resolution	1280 x 1024

Specifications	AFL-517A-GM45
Brightness (cd/m2)	300
Contrast Ratio	800:1
LCD Color	16.7M
Pixel Pitch (mm)	0.264(H) x 0.264(V)
Viewing Angle (H-V)	160/160
Backlight MTBF	40000 hrs
SBC Model	AFLMB5-GM45-R10
CPU options	Intel® Core™2 Duo T9400 2.53 GHz Intel® Core™2 Duo P8400 2.6 GHz Intel® Celeron® M 575 2.0 GHz
Chipset	Intel® GM45 + ICH9M
RAM	1 or 2 GB preinstalled (see model variations) Two 200-pin 667 or 800 MHz DDR2 SO-DIMM (4 GB Max.) supported
I/O Ports and Switches	One Audio line-out jack One DisplayPort One HDMI port One Power jack One Power switch One Reset button Two RJ-45 GbE LAN ports One RS-232 serial port One RS-232/422/485 serial port Four USB 2.0 ports
SSD	CF Type II
HDD	One 2.5” SATA HDD bay
ODD	SATA slim type DVD Combo drive
Watchdog Timer	Software programmable supports 1~255 sec. System reset
Audio	AMP 3W + 3W internal speakers
Bluetooth	Bluetooth V2.0 module via internal USB interface
Wireless LAN	Wireless LAN 802.11 b/g/n PCIe mini card module
HSDPA Mobile Solution	Optional via internal USB interface

Specifications	AFL-517A-GM45
Construction Material	ABS + PC Plastic front frame
Membrane Keypad (OSD)	LCD On/Off, Brightness Up/Down, Volume Up/Down
LED Function	One Power ON/OFF LED on Front Panel
Mounting	Panel, Wall, Rack, Arm (VESA 100mm x 100mm)
Front Panel Color	Silver
Dimension (W x H x D mm)	428 x 350 x 79
Operation Temperature (ºC)	0ºC~40ºC with HDD 0ºC~45ºC with CF card or SATA 2.5” SSD HDD
Storage Temperature (ºC)	-20ºC~60ºC
Net Weight	7.5 Kg
IP Level	Front Frame IP64
EMC	CE, FCC, CCC
Safety	CB
Touch Screen	Resistive 5-Wire
Power Adapter	150W Power Adapter 90VAC~264VAC, 50/60Hz, 12VDC
Power Requirement	12VDC
Power Consumption	92W

Table 1-2: AFL-517A-GM45 Specifications

1.6 Dimensions

The AFL-408A/B-N270 dimensions are listed and shown in the figure below.

- **Width**: 428 mm
- **Height**: 350 mm
- **Depth**: 79 mm

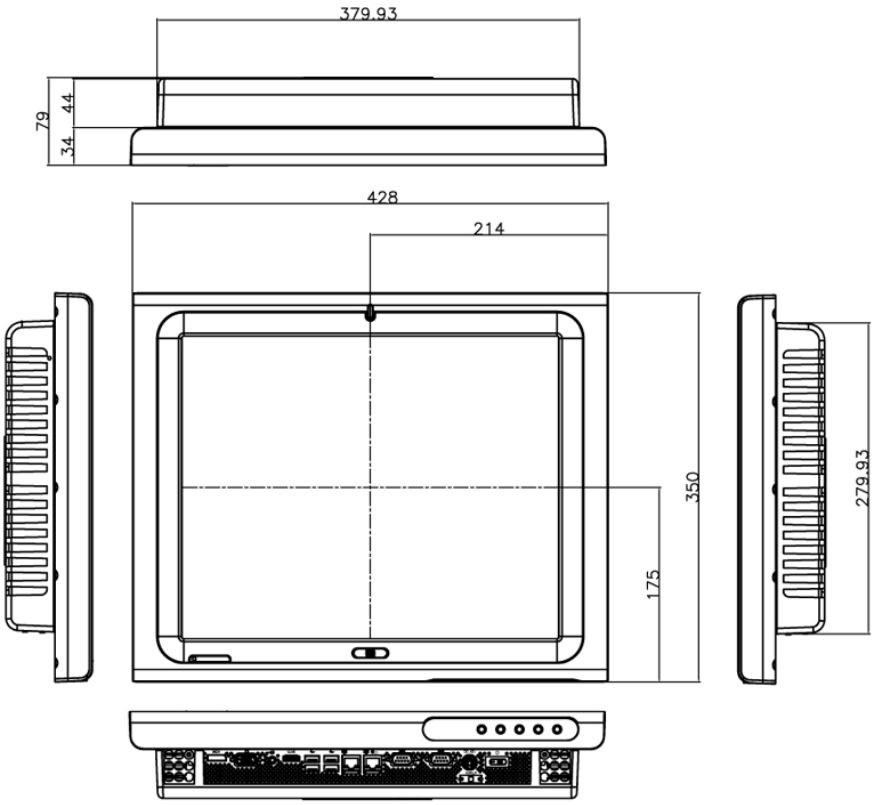


Figure 1-5: AFL-517A-GM45 Dimensions (mm)

Chapter

2

Installation

WARNING:

When installing the AFL-517A-GM45, make sure to:

- **Turn the power off**: Chance of electrocution. Turn off the monitor and unplug it from the power supply.
- **Only let certified engineers change the hardware settings**: Incorrect settings can cause irreparable damage to the product.
- **Install the monitor with assistance**: The product is very heavy and may be damaged by drops and bumps. Two or more people should install the panel PC.
- **Take anti-static precautions**: Electrostatic discharge can destroy electrical components and injure the user. Users must ground themselves using an anti-static wristband or similar device.

The installation steps below should be followed in order.

Step 1: Unpack the flat panel PC

Step 2: Check all the required parts are included

Step 3: Install the hard drive

Step 4: Install the CompactFlash® card

Step 5: Mount the flat panel PC

Step 6: Connect peripheral devices to the bottom panel of the flat panel PC

Step 7: Connect the power cable

Step 8: Configure the system

2.1 Unpack the Panel PC

To unpack the flat panel PC, follow the steps below:

WARNING!

Only remove the protective plastic cover stuck to the front screen after installation. The plastic layer protects the monitor surface during installation process.

Step 1: Carefully cut the tape sealing the box. Only cut deep enough to break the tape.

Step 2: Open the outside box.

Step 3: Carefully cut the tape sealing the box. Only cut deep enough to break the tape.

Step 4: Open the inside box.

Step 5: Lift the monitor out of the boxes.

Step 6: Remove the peripheral parts box from the main box.

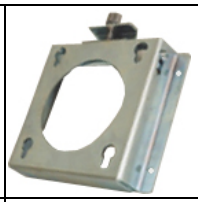
2.2 Packing List

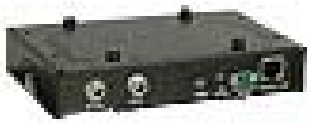
The AFL-517A-GM45 flat panel PC is shipped with the following components:

Quantity	Item	Image
1	AFL-517A-GM45 Panel PC **P/N**: AFL-517A-GM45-T94/R/D/2G-R21 AFL-517A-GM45-P84/R/D/2G-R21 AFL-517A-GM45-CM5/R/D/1G-R21	
1	Power adapter **P/N**: 63000-FSP150AHAN1808-RS	

1	Power cord **P/N**: 32000-000002-RS	
1	Screw kit (4 x M3; 5mm) **P/N**: 44233-030081-RS	
1	User manual CD and driver CD **P/N**: 7B000-000087-RS	
1	One Key Recovery	
1	Touch pen **P/N**: 43125-0002C0-RS	

Optional	
WIN CE 5.0 ALF-517A-GM45-CE-R21	
WIN CE 6.0 ALF-517A-GM45-CE060-R21	
WIN XPE ALF-517A-GM45-XPE-R21	
Linux ALF-517A-GM45-LNX-R21	
Panel mounting kit (**P/N**: AFL-17D)	

Wall mounting kit (**P/N**: AFLWK-19)	
Stand (**P/N**:STAND-A19)	
Stand (**P/N**:STAND-B19)	X
Stand (**P/N**:STAND-210-RS)	
Arm (**P/N**: ARM-11-RS)	
Arm (**P/N**: ARM-31-RS)	

Hybrid card reader (**P/N**: AFLP-17AMSI-U)	
Magnetic stripe reader (**P/N**: AFLP-17AMSR-U)	
DC 12 V Input UPS (**P/N**: AUPS-B10-R10)	
DC 9-36V Input UPS (**P/N**: AUPS-B20-R10)	

Make sure all the components listed in the packing list are present. If any of these items are missing or damaged, contact the distributor or sales representative immediately.

2.3 Removing the Rear Panel

To access the AFL-517A-GM45 internally the rear panel must be removed. To remove the rear panel, please follow the steps below.

Step 1: Remove the retention screws (**Figure 2-1**).

Figure 2-1: Back Cover Retention Screws

Step 2: Lift the off cover after removing the retention screws. More strength maybe required to separate the cover from the chassis.

Step 3: Remove the retention screws (**Figure 2-2**) from the aluminum cover.

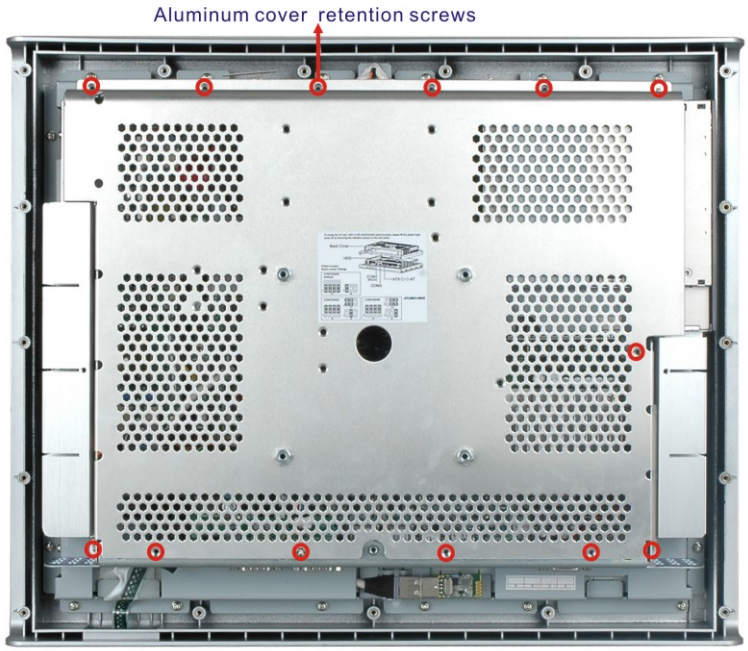


Figure 2-2: Aluminum Cover Retention Screws

Step 4: Lift the off cover.

WARNING:

Failing to reinstall the covers may result in permanent damage to the system. Please make sure all coverings are properly installed.

WARNING:

Over-tightening rear cover screws will crack the plastic frame. Maximum torque for cover screws is 5 kg-cm (0.36 lb-ft/0.49 Nm).

2.4 CF Card Installation

The AFL-517A-GM45 has one CF Type II slot inside the rear panel. The back cover and aluminum inner cover must be removed to access the slot. To install the CF card, follow the instructions below.

Step 1: Locate the SATA cable. Remove the retention screws. Disconnect the SATA cable from the HDD if installed.

Step 2: Locate the SATA HDD bay bracket. Remove the retention screws. (**Figure 2-3**).

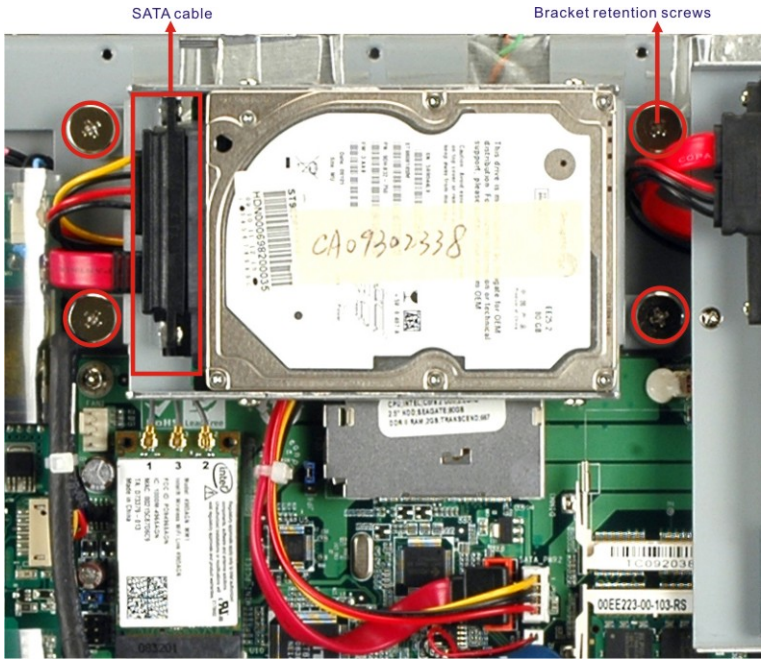


Figure 2-3: HDD Bay Bracket Retention Screws and SATA Cable Locations

Step 3: Remove the bracket.

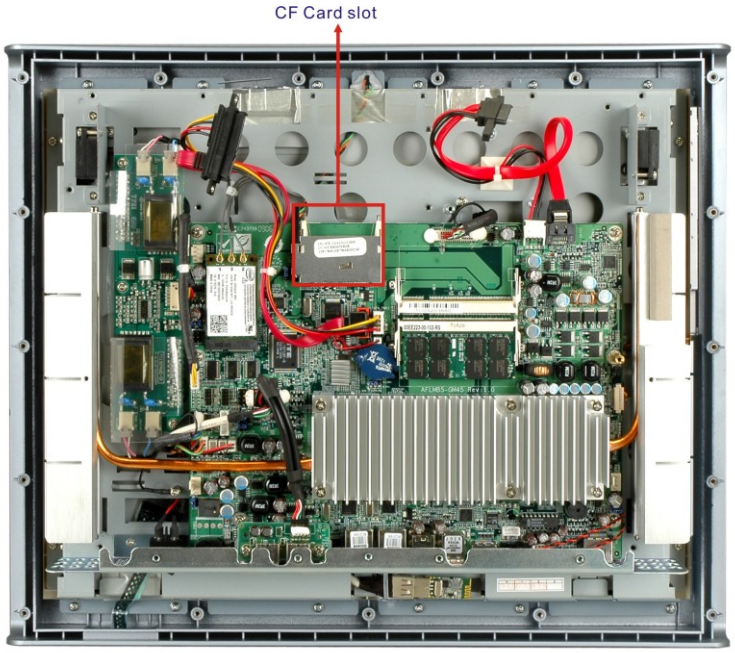


Figure 2-4: CF Card Slot Location

Step 4: Insert a CF card into the slot.

Step 5: Replace the SATA HDD bay bracket. Reinsert the retention screws.

Step 6: Reconnect the SATA cable. Reinsert the retention screws.

2.5 Hard Drive Installation

The AFL-517A-GM45 has one hard drive bay inside the rear panel. To install a hard drive follow the instructions below.

Step 1: Locate the HDD bracket and insert the HDD into the bracket

Step 2: Slide HDD SATA connector into the SATA cable to connect.

Step 3: Fasten SATA HDD retention screws to secure the HDD.

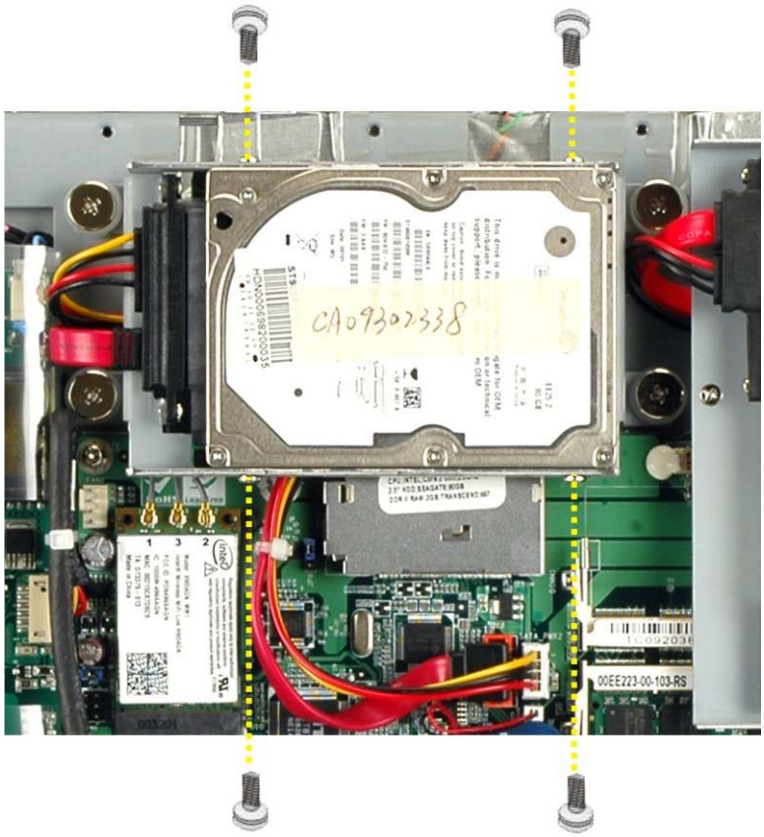


Figure 2-5: HDD Retention Screws

2.6 AT/ATX Mode Selection

AT and ATX power modes can both be used on the AFL-517A-GM45. The selection is made through an AT/ATX switch on the bottom panel (**Figure 2-6**). To select AT mode or ATX mode, follow the steps below.

Step 4: Locate the AT/ATX switch on the bottom panel (**Figure 2-6**).

Figure 2-6: AT/ATX Switch Location

Step 5: Adjust the AT/ATX switch.

2.6.1 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The AFL-517A-GM45 panel PC turns on automatically when the power is connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

- ATM
- Self-service kiosk
- Plant environment monitoring system
- Factory automation platform
- Manufacturing shop flow

2.6.2 ATX Power Mode

With the ATX mode selected, the AFL-517A-GM45 panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch in standby mode. Remote power control is perfect for advertising applications since the

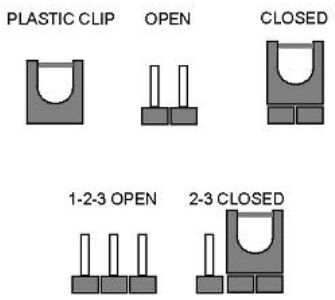
broadcasting time for each panel PC can be set individually and controlled remotely. Other possible application includes

- Security surveillance
- Point-of-Sale (POS)
- Advertising terminal

2.7 Jumper Settings

NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.



The following jumpers can be found on the motherboard installed in the AFL-517A-GM45. Before the AFL-517A-GM45 is installed, the jumpers must be set in accordance with the desired configuration. The jumpers on the AFL-517A-GM45 motherboard are listed in **Table 2-1**.

Description	Label	Type
Clear CMOS	CLR_CMOS1	2-pin header
COM1,COM3 Pin 9 setting	J6	10-pin header
COM3 RX RS-232/422/485 select	J9	6-pin header
COM3 TX RS-422/485 select	J10	6-pin header
COM3 RS-232/422/485 select	J5	12-pin header

Table 2-1: Jumpers

2.7.1 Accessing the Jumpers

To access the jumpers, remove the back panel. To remove the back panel, please refer to **Section 2.2**.

2.7.2 Preconfigured Jumpers

WARNING:

Do not change the settings on the jumpers in described here. Doing so may disable or damage the system.

The following jumpers are preconfigured for the AFL-517A-GM45. Users should not change these jumpers (**Table 2-2**).

Jumper Name	Label	Type
LVDS voltage selection	J1	3-pin header
Touch Screen Select	J12	4-pin header
Panel Type and Resolution	JP1	8-pin header

Table 2-2: Preconfigured Jumpers

2.7.3 Clear CMOS Jumper

Jumper Label: **CLR_CMOS1**

Jumper Type: 2-pin header

Jumper Settings: See **Table 2-3**

Jumper Location: See **Figure 2-7**

If the AFL-517A-GM45 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close the pins for a few seconds then remove the jumper clip.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The clear CMOS jumper settings are shown in **Table 2-3**.

Clear CMOS	Description	
Short 1 - 2	Keep CMOS Setup	Default
Short 2 - 3	Clear CMOS Setup	

Table 2-3: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 2-7** below.

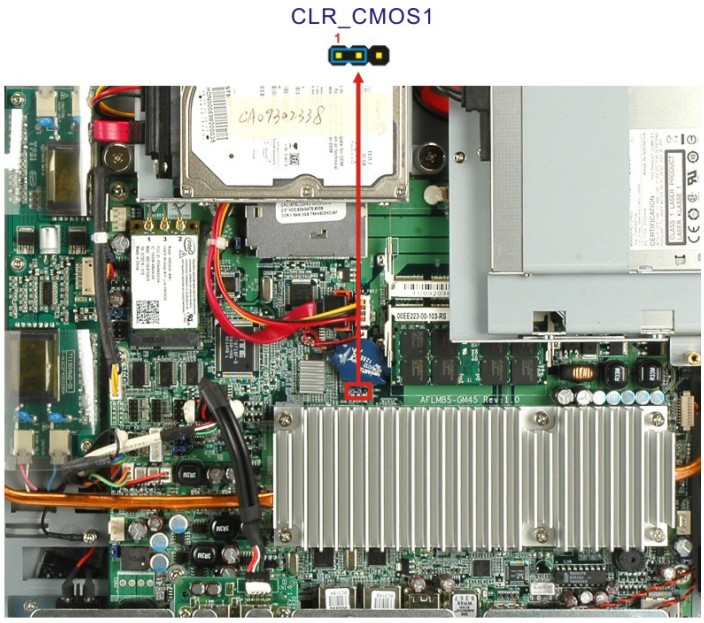


Figure 2-7: Clear CMOS Jumper

2.7.4 COM1, COM3 Port Pin 9 Select

Jumper Label: **J6**

Jumper Settings: See **Table 2-4**

Jumper Location: See **Figure 2-8**

Use jumper J6 to configure pin 9 settings on COM1 and COM3 DB-9 connectors. Pin 9 on the COM1 and the COM3 DB-9 connectors can be set as the ring (RI) signal, +5 V or +12 V. The COM1 and COM3 Pin 9 Setting jumper selection options are shown in **Table 2-4**.

JP8	Description	
Short 1-3	COM1 RI Pin use +12 V	
Short 3-5	COM1 RI Pin use +5 V	
Short 7-9	COM1 RI Pin use RI	Default
Short 2-4	COM3 RI Pin use +12 V	
Short 4-6	COM3 RI Pin use +5 V	
Short 8-10	COM3 RI Pin use RI	Default

Table 2-4: COM1 Pin 9 Setting Jumper Settings

The COM1 and COM3 Pin 9 Setting jumper location is shown in **Figure 2-8** below.

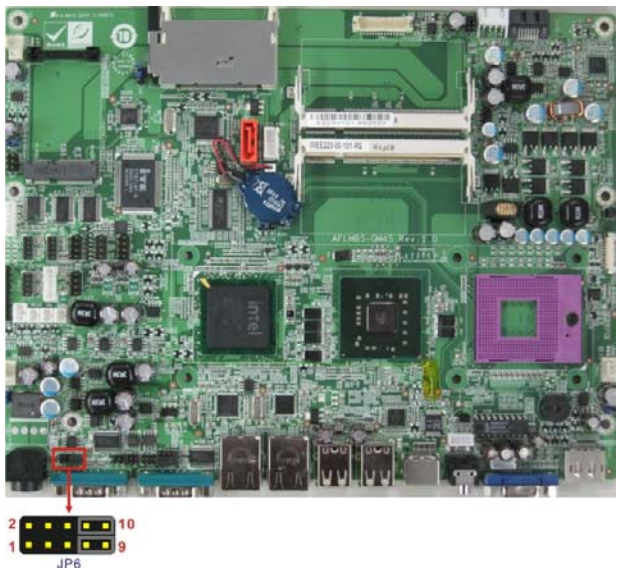


Figure 2-8: COM1 and COM3 Pin 9 Setting Jumper Locations

2.7.4.1 COM3 RS-422 and RS-485 Pinouts

The pinouts for RS-422 and RS-485 operation of external serial port COM 3 are detailed below.

COM 3	RS-422 Description
Pin 1	TX-
Pin 2	TX+
Pin 6	RX-
Pin 7	RX+

Table 2-5: RS-422 Pinouts

COM 3	RS-485 Description
Pin 1	Data-
Pin 2	Data+

Table 2-6: RS-485 Pinouts

2.7.5 COM3 RX Function Select Jumper

Jumper Label: **J9**

Jumper Type: 6-pin header

Jumper Settings: See **Table 2-7**

Jumper Location: See **Figure 2-9**

The COM3 RX Function Select jumper sets the communication protocol used by the COM3 port as RS-232, RS-422 or RS-485. The COM3 RX Function Select jumper settings are shown in **Table 2-7**.

COM3 RX Function Select	Description	
Short 1-2	RS-232	Default
Short 3-4	RS-422	
Short 5-6	RS-485	

Table 2-7: COM3 RX Function Select Jumper Settings

The COM3 RX Function Select jumper location is shown in **Figure 2-9**.

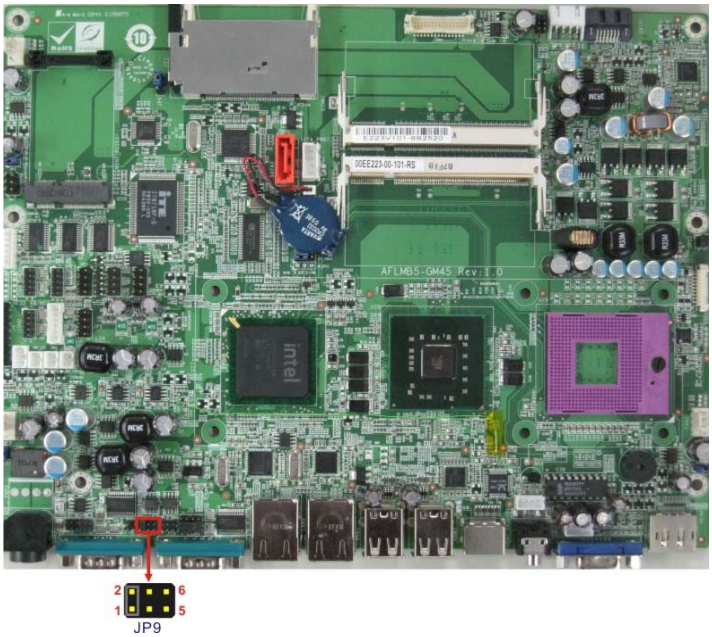


Figure 2-9: COM3 RX Function Select Jumper Location

2.7.6 COM3 TX Function Select Jumper

Jumper Label:	**J10**
Jumper Type:	6-pin header
Jumper Settings:	See **Table 2-8**
Jumper Location:	See **Figure 2-10**

The COM3 TX Function Select jumper configures the TX pin on COM3 serial port connector as RS-422 as an RS-485. The COM3 TX Function Select jumper selection options are shown in **Table 2-8**.

COM3 TX Function Select	Description	
Short 1 – 3	RS-422	Default
Short 2 – 4	RS-422	Default
Short 3 – 5	RS-485	
Short 4 – 6	RS-485	

Table 2-8: COM3 TX Function Select Jumper Settings

The COM3 TX Function Select jumper location is shown in **Figure 2-10** below.

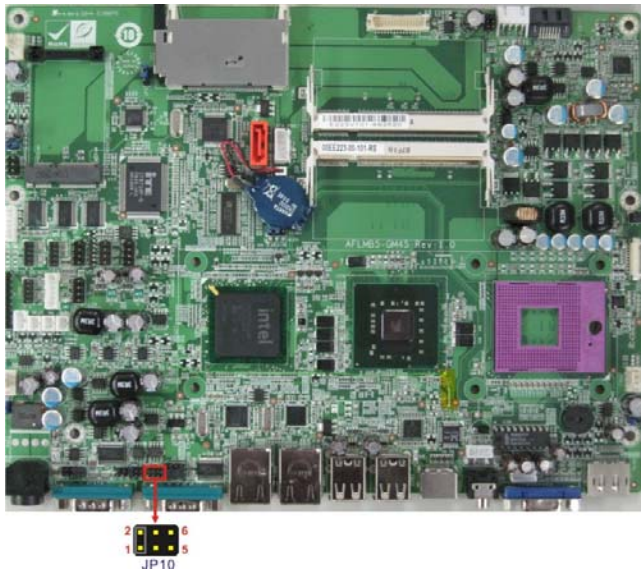


Figure 2-10: COM3 TX Function Select Jumper Pinout Locations

2.7.7 COM3 RS-232/422/485 Serial Port Select Jumper

Jumper Label:	**J5**
Jumper Type:	12-pin header (four 3-pin headers combined)
Jumper Settings:	See **Table 2-9**
Jumper Location:	See **Figure 2-11**

The COM3 RS-232/422/485 Serial Port Select jumper sets the communication protocol used by the second serial communications port (COM3) as RS-232, RS-422 or RS-485. The COM3 RS-232/422/485 Serial Port Select settings are shown in **Table 2-9**.

RS-232/485 Select	Description	
Short 1-2	RS-232	Default
Short 4-5	RS-232	Default
Short 7-8	RS-232	Default

Short 10-11	RS-232	Default
Short 2-3	RS-422/485	
Short 5-6	RS-422/485	
Short 8-9	RS-422/485	
Short 11-12	RS-422/485	

Table 2-9: COM3 RS-232/422/485 Serial Port Select Jumper Settings

The COM3 RS-232/422/485 Serial Port Select jumper location is shown in **Figure 2-11**.

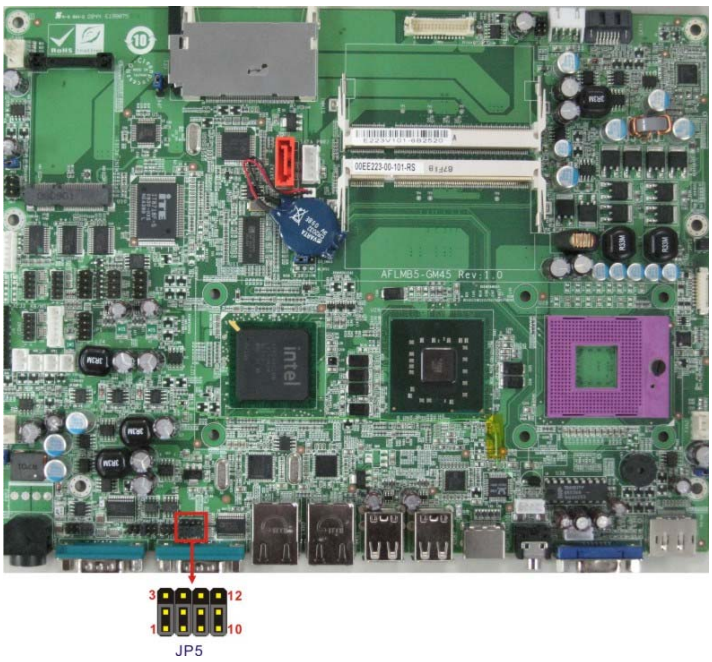


Figure 2-11: COM3 RS-232/422/485 Serial Port Select Jumper Location

2.8 Mounting the System

WARNING!

When mounting the flat panel PC onto an arm, onto the wall or onto a panel, it is better to have more than one person to help with the installation to make sure the panel PC does not fall down and get damaged.

The four methods of mounting the AFL-517A-GM45 are listed below.

- Wall mounting
- Panel mounting
- Arm mounting
- Rack mounting

The four mounting methods are described below.

2.8.1 Wall Surface Mounting

To mount the flat panel PC onto the wall, please follow the steps below.

Step 1: Select the location on the wall for the wall-mounting bracket.

Step 2: Carefully mark the locations of the four screw holes in the bracket on the wall.

Step 3: Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

Step 4: Align the wall-mounting bracket screw holes with the pilot holes.

Step 5: Secure the mounting-bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 2-12**).

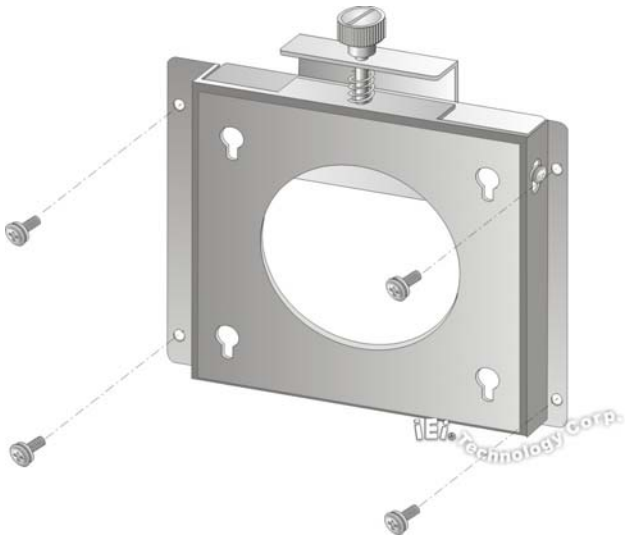


Figure 2-12: Wall-mounting Bracket

Step 6: Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the real panel of the flat panel PC and tighten until the screw shank is secured against the rear panel (**Figure 2-13**).

Step 7: Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.

Step 8: Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 2-13**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

NOTE:

In the diagram below the bracket is already installed on the wall.

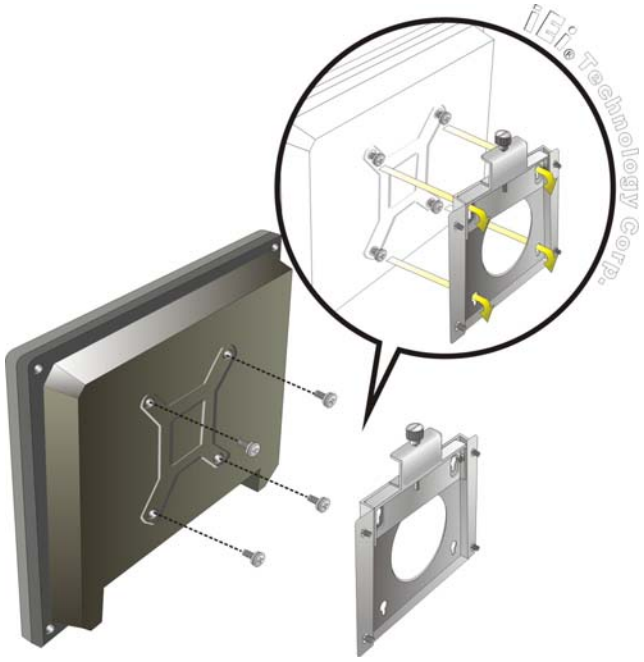


Figure 2-13: Chassis Support Screws

Step 9: Secure the panel PC by fastening the retention screw of the wall-mounting bracket. (**Figure 2-14**).

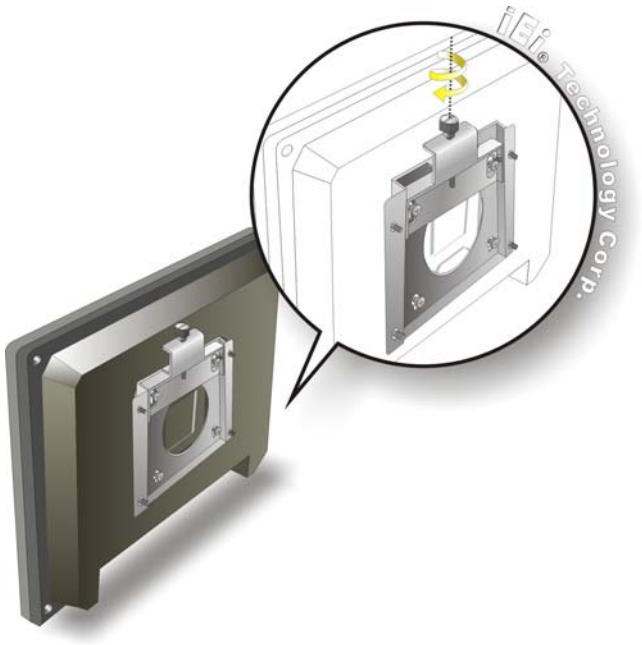


Figure 2-14: Secure the Panel PC

2.8.2 Panel Mounting

To mount the AFL-517A-GM45 flat panel PC into a panel, please follow the steps below.

Step 1: Select the position on the panel to mount the flat panel PC.

Step 2: Cut out a section from the panel that corresponds to the rear panel dimensions of the flat panel PC. Take care that the panel section that is cut out is smaller than the overall size of the metal frame that surrounds the flat panel PC but just large enough for the rear panel of the flat panel PC to fit through (**Figure 2-15**).

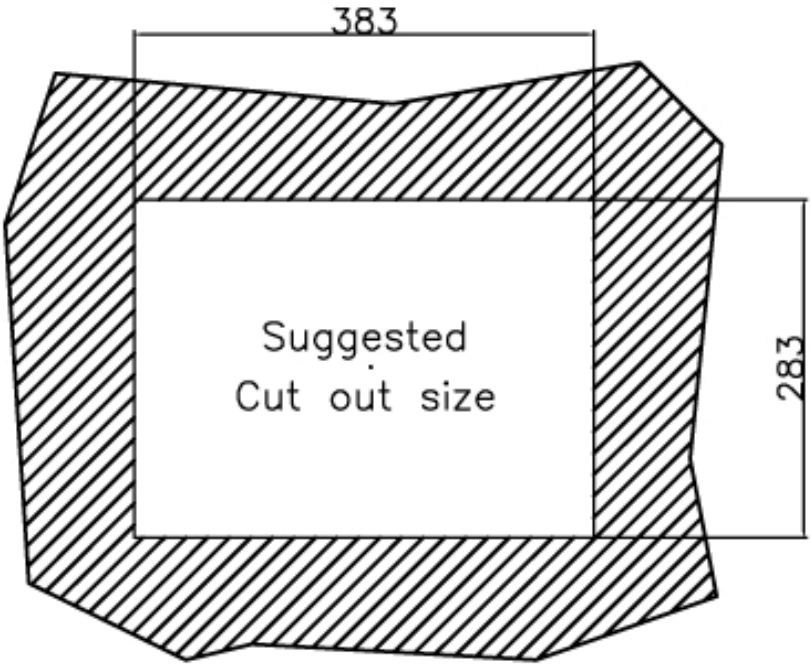


Figure 2-15: AFL-517A-GM45 Cutout Dimensions (units in mm)

Step 3: Slide the flat panel PC through the hole until the aluminum frame is flush against the panel.

Step 4: Insert the panel mounting clamps into the pre-formed holes along the edges of the chassis, behind the aluminum frame.

Step 5: Tighten the screws that pass through the panel mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 2-16**).

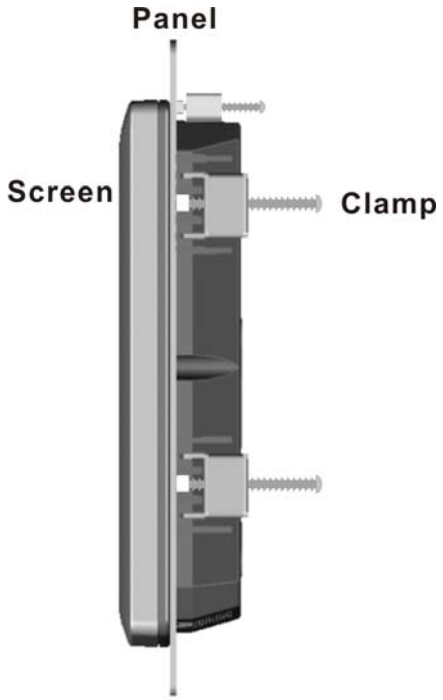


Figure 2-16: Tighten the Panel Mounting Clamp Screws

2.8.3 Cabinet and Rack Installation

The AFL-517A-GM45 flat panel PC can be installed into a cabinet or rack. The installation procedures are similar to the panel mounting installation. To do this, please follow the steps below:

NOTE:

When purchasing the cabinet/rack installation bracket, make sure it is compatible with both the AFL-517A-GM45 flat panel PC and the rack/cabinet into which the AFL-517A-GM45 is installed.

Step 1: Slide the rear of the AFL-517A-GM45 flat panel PC through the rack/cabinet bracket until the aluminum frame is flush against the front of the bracket (**Figure 2-17**).

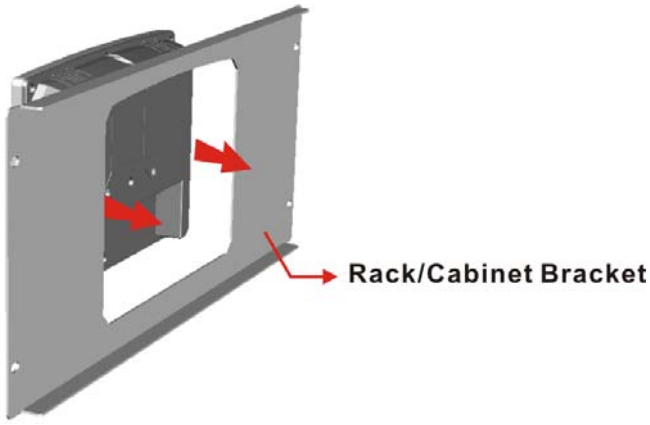


Figure 2-17: The Rack/Cabinet Bracket

Step 2: Insert the rack mounting clamps into the pre-formed holes along the edges of the flat panel PC, behind the ABS/PC plastic frame.

Step 3: Tighten the screws that pass through the rack mounting clamps until the plastic caps at the front of all the screws are firmly secured to the bracket (**Figure 2-18**).

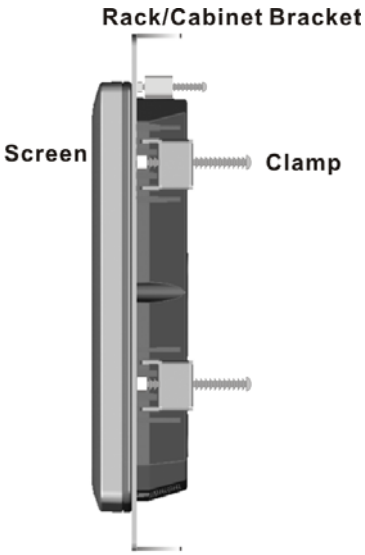


Figure 2-18: Secure the Rack/Cabinet Bracket

Step 4: Slide the flat panel PC with the attached rack/cabinet bracket into a rack or cabinet (**Figure 2-19**).

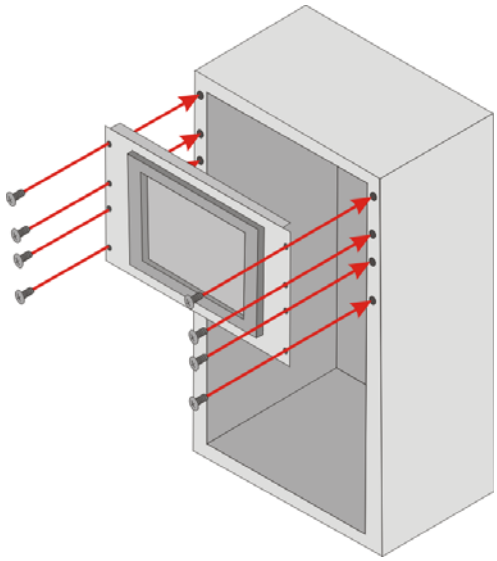


Figure 2-19: Install into a Rack/Cabinet

Step 5: Once the flat panel PC with the attached rack/cabinet bracket has been properly inserted into the rack or cabinet, secure the front of the rack/cabinet bracket to the front of the rack or cabinet (**Figure 2-19**).

2.8.4 Arm Mounting

The AFL-517A-GM45 is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 100 mm interface pad. To mount the AFL-517A-GM45 on an arm, please follow the steps below.

Step 6: The arm is a separately purchased item. Please correctly mount the arm onto the surface it uses as a base. To do this, refer to the installation documentation that came with the mounting arm.

NOTE:

When purchasing the arm please ensure that it is VESA compliant with a 100 mm interface pad. If the mounting arm is not VESA compliant it cannot be used to support the AFL-517A-GM45 flat panel PC.

Step 7: Once the mounting arm has been firmly attached to the surface, lift the flat panel PC onto the interface pad of the mounting arm.

Step 8: Align the retention screw holes on the mounting arm interface with those in the flat panel PC. The arm mount retention screw holes are shown in **Figure 2-20**.

Figure 2-20: AFL-412A-N270 Arm Mounting Retention Screw Holes

Step 9: Secure the flat panel PC to the interface pad by inserting four retention screws through the bottom of the mounting arm interface pad and into the flat panel PC.

2.9 Bottom Panel Connectors

The bottom panel connectors extend the capabilities of the panel PC, but are not essential for operation (except for power).

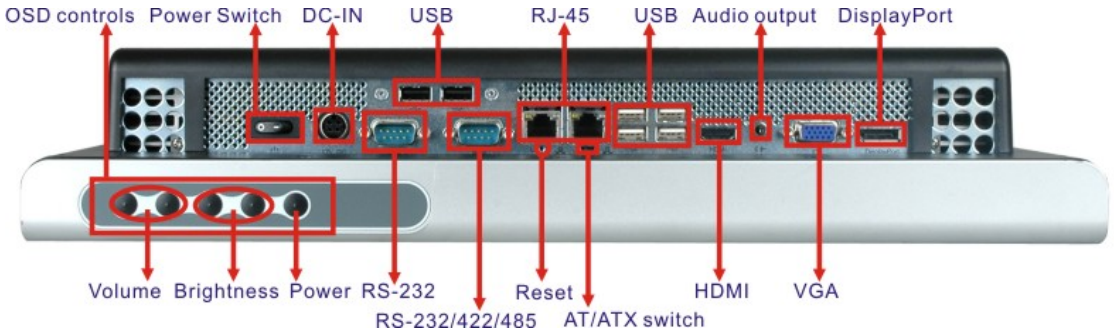


Figure 2-21: AFL-517A-GM45 I/O Interface Connector Panel

2.9.1 LAN Connection

There is one external RJ-45 LAN connector. The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connector** on the bottom panel of the AFL-517A-GM45 Series.

Step 2: **Align the connector.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the bottom panel of the AFL-517A-GM45. See **Figure 2-22**.

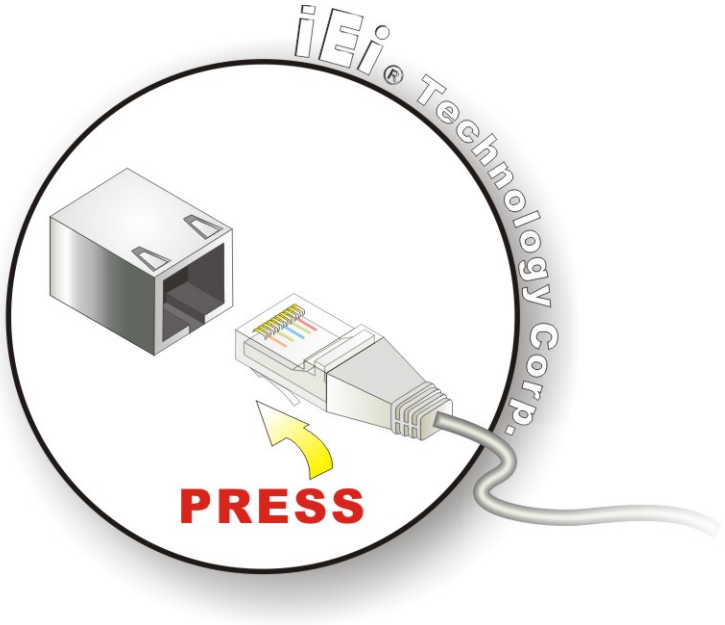


Figure 2-22: LAN Connection

Step 3: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the onboard RJ-45 connector.

2.9.2 Serial Device Connection

The AFL-517A-GM45 has two DB-9 connectors for connecting to RS-232 and RS-232/422/485 serial devices on the bottom panel. Follow the steps below to connect a serial device to the AFL-517A-GM45 panel PC.

Step 1: **Locate the DB-9 connector**. The location of the DB-9 connector is shown in **Chapter 3**.

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See **Figure 2-23**.

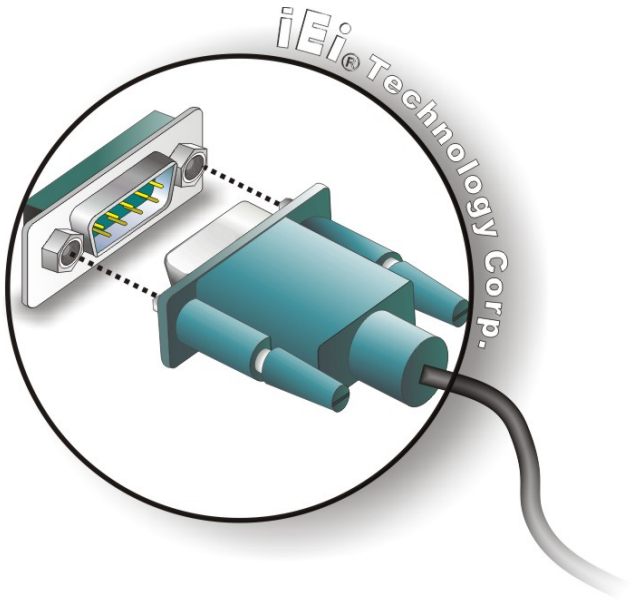


Figure 2-23: Serial Device Connector

Secure the connector. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

2.9.2.1 COM3 RS-232, RS-422 and RS-485 Pinouts

The pinouts for RS-422 and RS-485 operation of external serial port COM3 are detailed below.

PIN NO.	RS-232 DESCRIPTION	PIN NO.	RS-232 DESCRIPTION
1	DCD	6	DSR
2	RX	7	RTS
3	TX	8	CTS
4	DTR	9	RI
5	GND		

Table 2-10: RS-232 Pinouts

COM 3	RS-422 Description
Pin 1	TX-
Pin 2	TX+
Pin 6	RX-
Pin 7	RX+

Table 2-11: RS-422 Pinouts

COM 3	RS-485 Description
Pin 1	Data-
Pin 2	Data+

Table 2-12: RS-485 Pinouts

2.9.3 USB Device Connection

There are four external USB 2.0 connectors. All connectors are perpendicular to the AFL-517A-GM45. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

Step 3: **Located the USB connectors**. The locations of the USB connectors are shown in **Chapter 2**.

Step 4: **Align the connectors.** Align the USB device connector with one of the connectors on the bottom panel. See **Figure 2-24**.

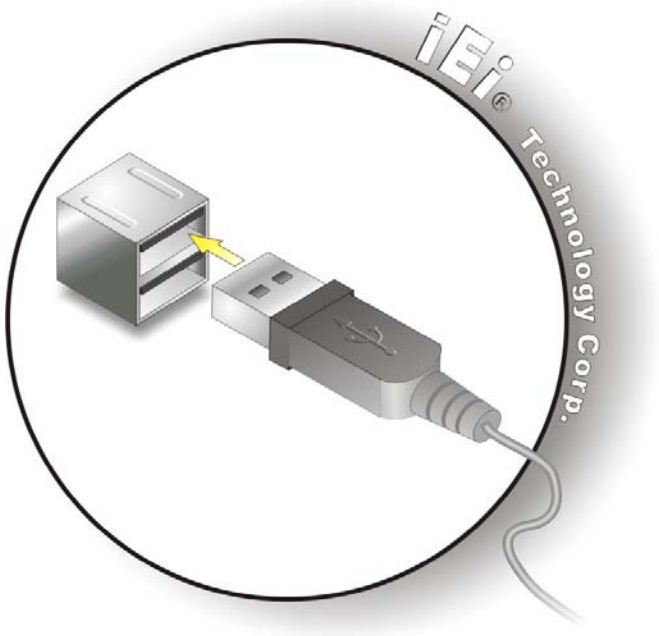


Figure 2-24: USB Device Connection

Step 5: **Insert the device connector.** Once aligned, gently insert the USB device connector into the onboard connector.

2.9.4 VGA connection

The AFL-517A-GM45 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the AFL-517A-GM45, please follow the instructions below.

Step 1: **Locate the female DB-15 connector**. The location of the female DB-15 connector is shown in **Chapter 3**.

Step 2: **Align the VGA connector**. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

Step 3: **Insert the VGA connector**. Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the AFL-517A-GM45. See **Figure 2-25**.

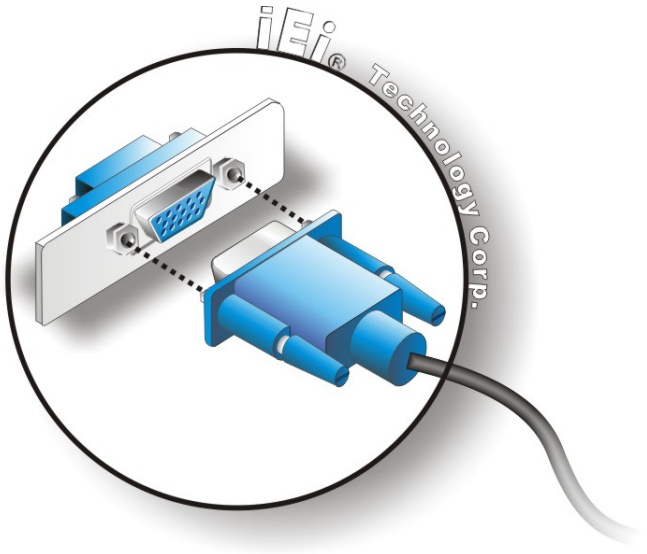


Figure 2-25: VGA Connector

Secure the connector. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

2.10 Power Connection

The power cable connects the power adapter to the power outlet. The power adapter and power cable are required for operation of the panel PC.

Step 1: Connect the power adapter to the panel PC.

Step 2: Connect the power cable to the included power adapter.

Step 3: Connect the power cable to the power outlet.

2.11 Driver Installation

NOTE:

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The following drivers can be installed on the system; each driver is in its own directory on the driver CD:

- Chipset driver
- Graphics driver
- LAN driver
- Audio driver
- Touch panel driver
- Keypad utility driver
- Wireless LAN card driver
- Bluetooth driver

Chapter

3

System Maintenance

3.1 System Maintenance Introduction

WARNING!

Turn off the power before removing the back cover. Risk of electrocution. Severe damage to the product and injury to the body may occur if internal parts are touched while the power is still on.

WARNING!

Take antistatic precautions when working on the internal components. Some internal components are easily damaged or destroyed by electrostatic discharge. Take antistatic precautions to prevent electrostatic discharge.

If the components of the AFL-517A-GM45 fail they must be replaced. Components that can be replaced include:

- CF Module
- Bluetooth module
- Wireless LAN module
- SO-DIMM module

Please contact the system reseller or vendor to purchase the replacement parts. Back cover removal instructions for the AFL-517A-GM45 are described below.

3.2 Motherboard Replacement

In the case of motherboard failure, please contact an IEI sales representative, reseller or system vendor. The motherboard is accessible after opening the rear cover.

3.3 Cover Removal

To access the AFL-517A-GM45 internally the back panel must be removed. To remove the back panel, please follow the steps below.

Step 1: **Follow all anti-static procedures**. See **Section A.1.2**.

Step 2: **Turn off the power**. See **Section 3.1**.

Step 3: **Remove the retention screws on the back**. Remove the retention screws (**Figure 3-1**) from the rear panel.

Figure 3-1: Back Cover Retention Screws

Step 4: Lift the cover and pull down the cover a bit to make it possible to fully remove it. More strength is required to separate the cover from the chassis.

Step 5: Remove the retention screws (**Figure 3-2**) from the aluminum cover.

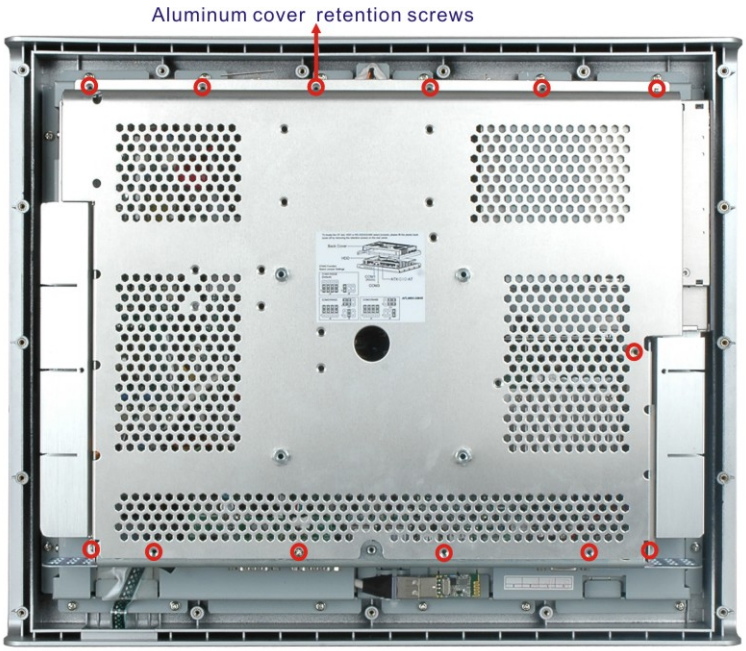


Figure 3-2: Aluminum Cover Retention Screws

Step 6: Remove the aluminum cover.

3.4 Memory Module Replacement

The flat panel PC is preinstalled with a 2 GB DDR2 memory module. If the memory module fails, follow the instructions below to replace the memory module.

Step 1: Remove the back cover and inner aluminum back cover. See **Section 3.3** above.

Step 2: Locate the SATA cable. Remove the retention screws. Disconnect the cable from the SATA connector on the ODD.

Step 3: Locate the SATA ODD bay bracket. Remove the retention screws.

Step 4: Remove the bracket.

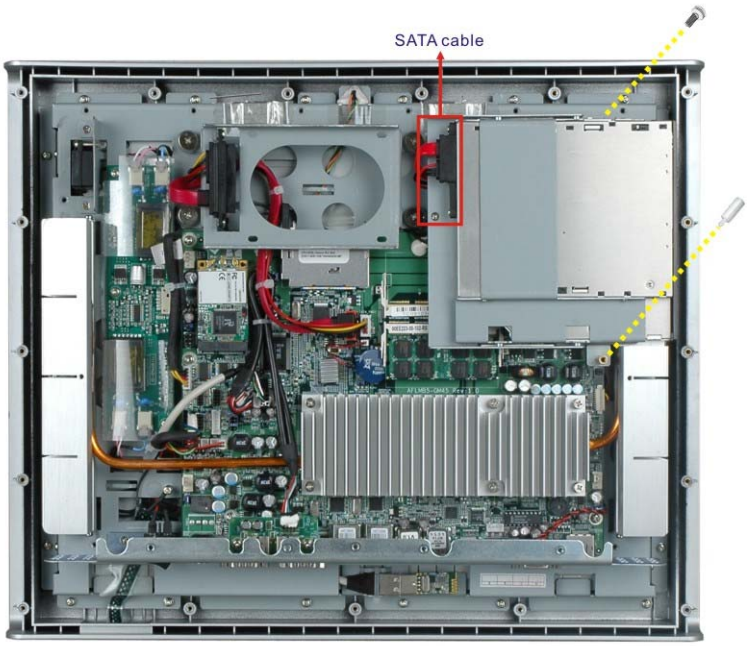


Figure 3-3: POC-GM45 SERIES ODD Bay Bracket Removal

Step 5: Locate the DDR2 SO-DIMM on the motherboard (**Figure 3-4**).

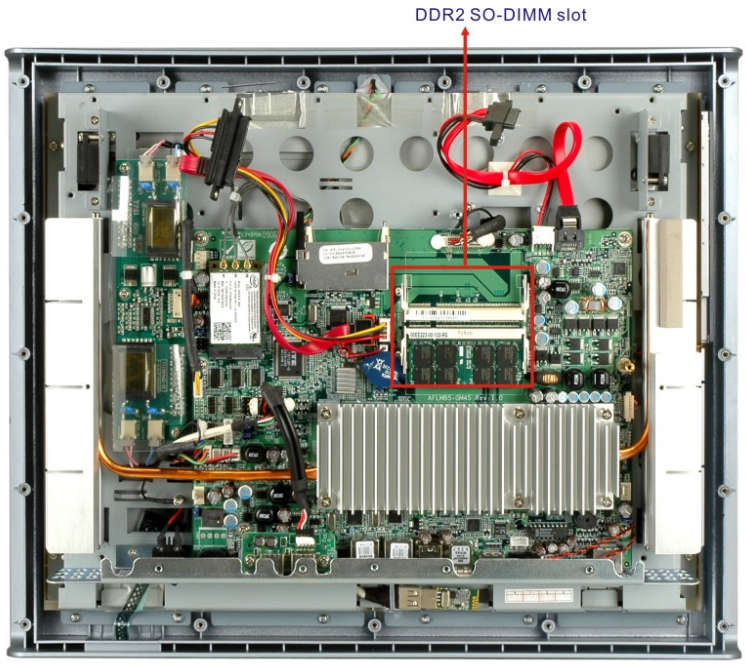


Figure 3-4: POC-GM45 SERIES SO-DIMM Socket Location

Step 6: Remove the DDR2 memory module by pulling both the spring retainer clips outward from the socket.

Step 7: Grasp the DDR2 memory module by the edges and carefully pull it out of the socket.

Step 8: Install the new DDR2 memory module by pushing it into the socket at an angle (**Figure 3-5**).

Step 9: Gently pull the spring retainer clips of the SO-DIMM socket out and push the rear of the DDR2 memory module down (**Figure 3-5**).

Step 10: Release the spring retainer clips on the SO-DIMM socket. They clip into place and secure the DDR2 memory module in the socket.

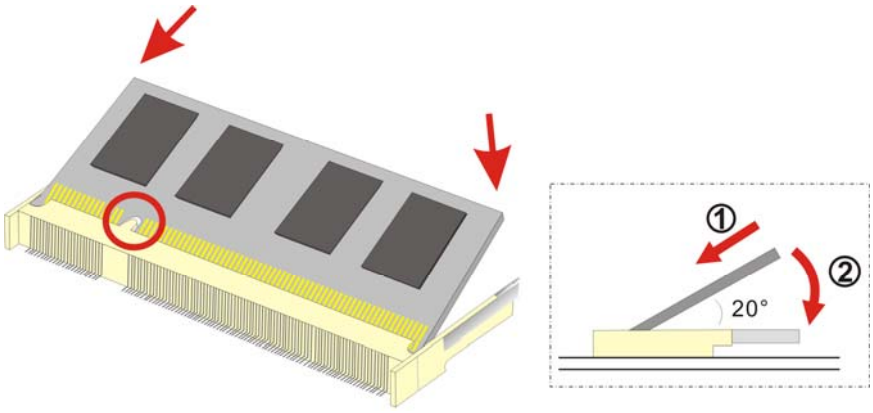


Figure 3-5: DDR2 SO-DIMM Module Installation

3.5 Hard Drive Replacement

The AFL-517A-GM45 has a hard drive pre-installed inside the rear panel. To replace the hard drive follow the instructions below.

Step 1: Remove the four HDD retention screws (**Figure 2-5**).

Step 2: Slide HDD away from SATA cable to disconnect. Remove the HDD from bay bracket.

Step 3: Replace with new HDD. Line up the SATA connector on the HDD to the SATA cable. Slide HDD SATA connector into the SATA cable to connect.

Step 4: Fasten SATA HDD retention screws to secure the HDD.

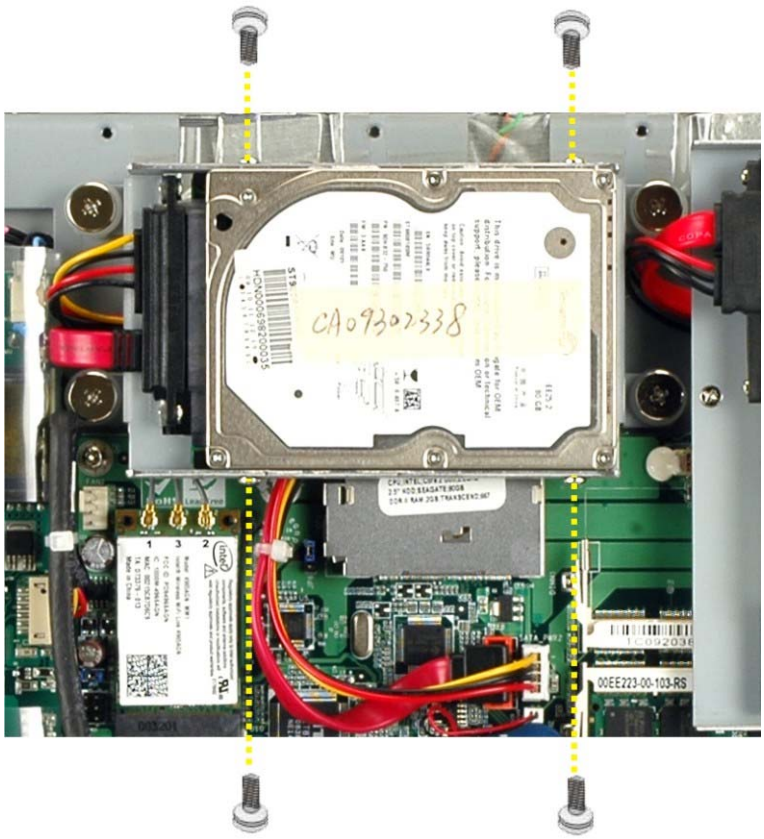


Figure 3-6: HDD Retention Screws

3.6 ODD Replacement

ODD replacement includes the following two procedures:

Step 1: Removing the malfunction ODD.

Step 2: Installing the replacement ODD.

3.6.1 ODD Removal

To remove the ODD, please follow the steps below.

Step 1: Power down the system.

Step 2: Remove the outer and inner cover case. See **Section 3.3**.

Step 3: Remove the SATA cable from the rear of ODD by removing the retention screws.

Figure 3-7: SATA Cable Retention Screws

Step 4: Remove the four retention screws (**Figure 3-8**) from the HDD bay bracket.

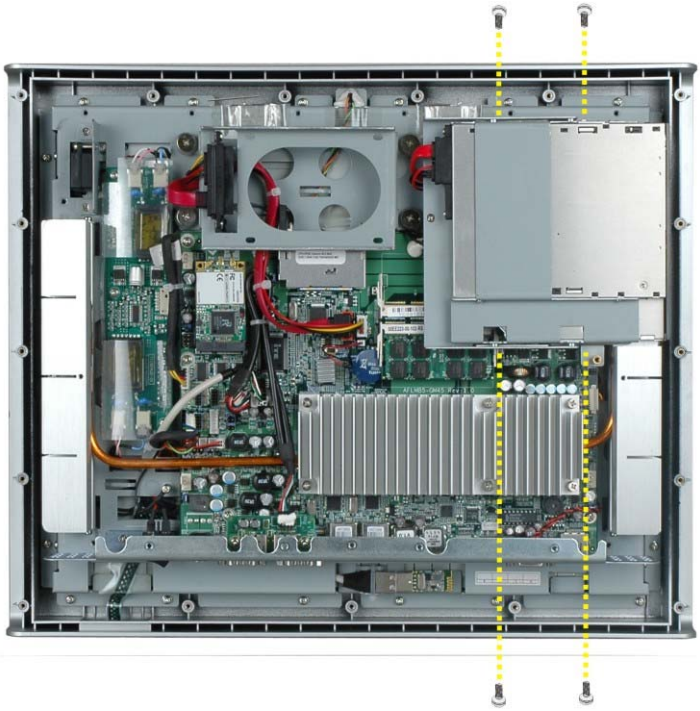


Figure 3-8: ODD Retention Screws

Step 5: Remove the ODD from the ODD bracket by removing the four retention screws on both sides of the ODD (**Figure 3-9**).

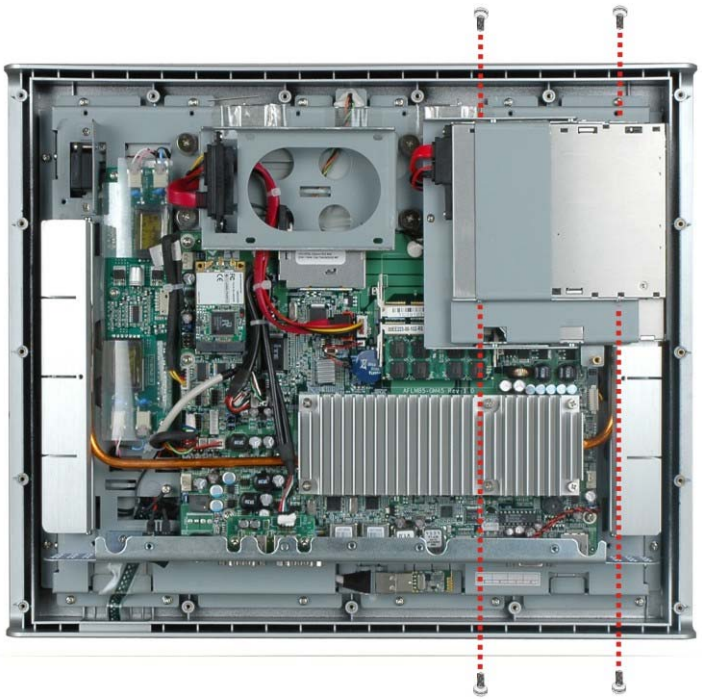


Figure 3-9: ODD Retention Screws

3.6.2 ODD Installation

To install the new ODD, please follow the steps below.

Step 1: Attach the new ODD to the ODD bracket. Align the four retention screw holes in both sides of ODD with the retention screw holes on the side of the ODD bracket. Insert the four previously removed retention screws into the bracket on both sides of the ODD (**Figure 3-9**).

Step 2: Reinstall the ODD into the bay bracket by aligning the retention screw holes in the top of the ODD bracket with the retention screw holes on the chassis. Reinsert the four previously removed retention screws into the ODD bay bracket (**Figure 3-8**).

Step 3: Reconnect the SATA cable to the connector on the rear of the ODD and reinsert the SATA cable retention screws.

3.7 Reinstalling the Covers

WARNING:

Failing to reinstall the covers may result in permanent damage to the system. Please make sure all coverings are properly installed.

WARNING:

Over-tightening rear cover screws will crack the plastic frame. Maximum torque for cover screws is 5 kg-cm (0.36 lb-ft/0.49 Nm).

When maintenance procedures are complete, please make sure all the covers are replaced, including the following:

- Aluminum cover
- CF card slot cover

Chapter

4

BIOS Options

4.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

4.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

4.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes

F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 4-1: BIOS Navigation Keys

4.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

4.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Chapter 5**.

4.1.5 BIOS Menu Bar

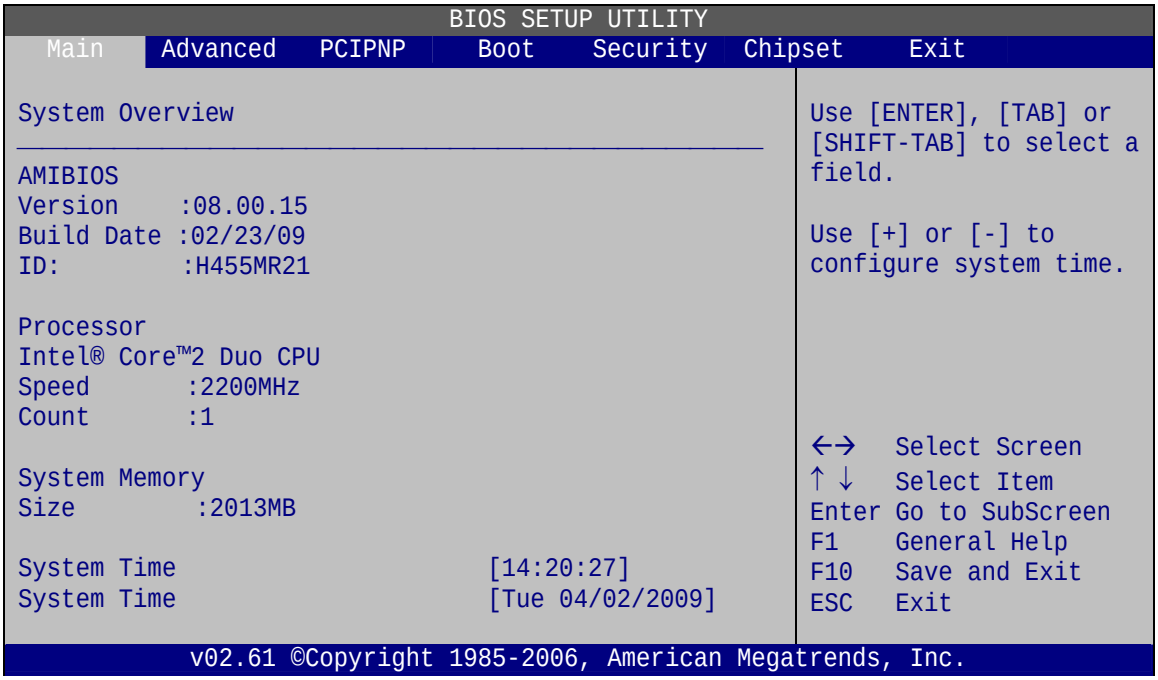
The **menu bar** on top of the BIOS screen has the following main items:

- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **PCIPnP** Changes the advanced PCI/PnP Settings
- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Chipset** Changes the chipset settings.
- **Exit** Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

4.2 Main

The Main BIOS menu (**BIOS Menu 1**) appears when the BIOS Setup program is entered. The Main menu gives an overview of the basic system information.



BIOS Menu 1: Main

➔ System Overview

The **System Overview** lists a brief summary of different system components. The fields in **System Overview** cannot be changed. The items shown in the system overview include:

- **AMI BIOS**: Displays auto-detected BIOS information
  - **Version**: Current BIOS version
  - **Build Date**: Date the current BIOS version was made
  - **ID**: Installed BIOS ID
- **Processor**: Displays auto-detected CPU specifications
  - **Type**: Names the currently installed processor
  - **Speed**: Lists the processor speed
  - **Count**: The number of CPUs on the motherboard
- **System Memory**: Displays the auto-detected system memory.
  - **Size**: Lists memory size

The System Overview field also has two user configurable fields:

➔ **System Time [xx:xx:xx]**

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

➔ **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

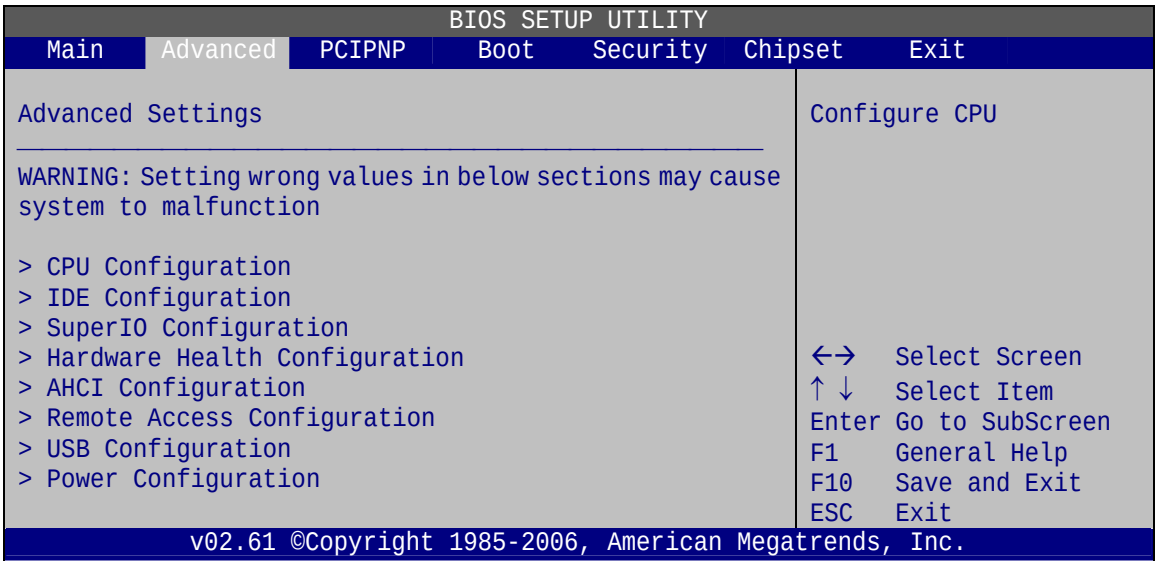
4.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING:

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

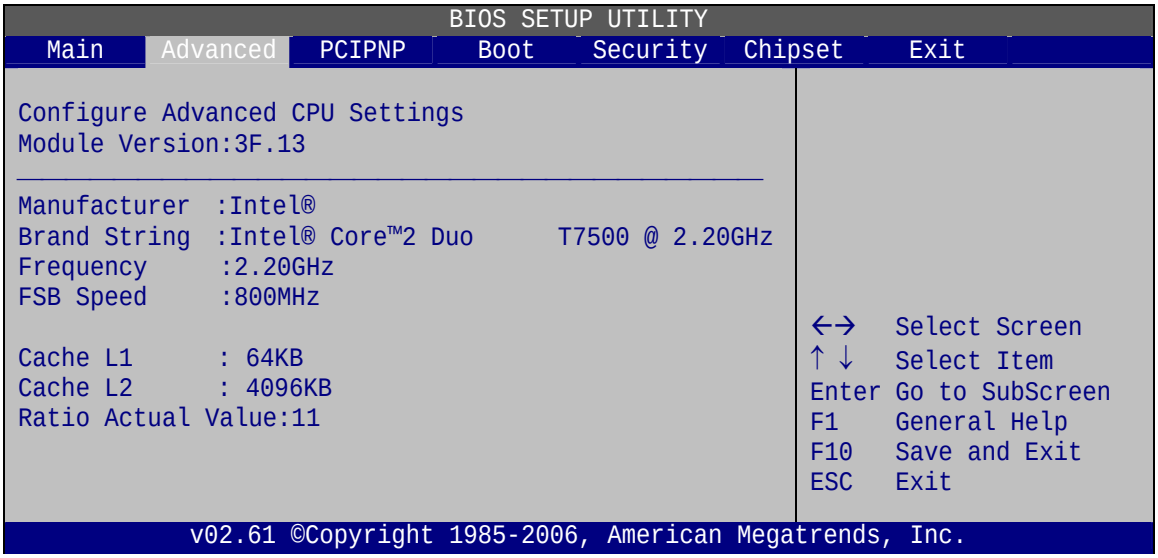
- CPU Configuration (see **Section 4.3.1**)
- IDE Configuration (see **Section 4.3.2**)
- Super I/O Configuration (see **Section 4.3.3**)
- Hardware Health Configuration (see **Section 4.3.4**)
- AHCI Configuration (see **Section 4.3.5**)
- Remote Access Configuration (see **Section 4.3.6**)
- USB Configuration (see **Section 4.3.7**)
- Power Configuration (see **Section 4.3.8**)



BIOS Menu 2: Advanced

4.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.



BIOS Menu 3: CPU Configuration

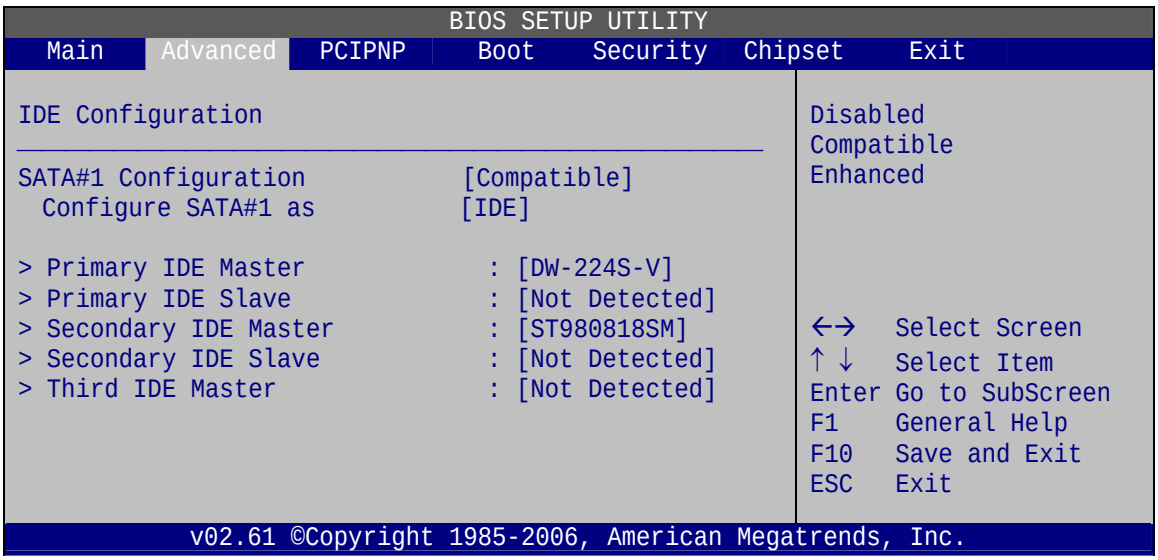
The CPU Configuration menu (**BIOS Menu 3**) lists the following CPU details:

- **Manufacturer**: Lists the name of the CPU manufacturer

- **Brand String**: Lists the brand name of the CPU being used
- **Frequency:** Lists the CPU processing speed
- **FSB Speed**: Lists the FSB speed
- **Cache L1**: Lists the CPU L1 cache size
- **Cache L2**: Lists the CPU L2 cache size

4.3.2 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 4**) to change and/or set the configuration of the IDE devices installed in the system.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
IDE Configuration
SATA#1 Configuration [Compatible]
Configure SATA#1 as [IDE]
> Primary IDE Master : [DW-224S-V]
> Primary IDE Slave : [Not Detected]
> Secondary IDE Master : [ST980818SM]
> Secondary IDE Slave : [Not Detected]
> Third IDE Master : [Not Detected]
Disabled
Compatible
Enhanced
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 4: IDE Configuration

➔ **SATA#1 Configurations [Compatible]**

Use the **SATA#1 Configurations** option to configure the SATA controller.

➔ **Disabled** Disables the on-board SATA controller.

➔ **Compatible** **DEFAULT** Configures the on-board SATA controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels. This mode supports up to 4 storage devices.

➔ **Enhanced** Configures the on-board SATA controller to be in Enhanced mode. In this mode, IDE channels and SATA

channels are separated. This mode supports up to 6 storage devices. Some legacy OS do not support this mode.

➔ **Configure SATA as [IDE]**

Use the **Configure SATA as** option to configure SATA devices as normal IDE devices.

➔ **IDE** **DEFAULT** Configures SATA devices as normal IDE device.

➔ **AHCI** Configures SATA devices as AHCI.

➔ **IDE Master and IDE Slave**

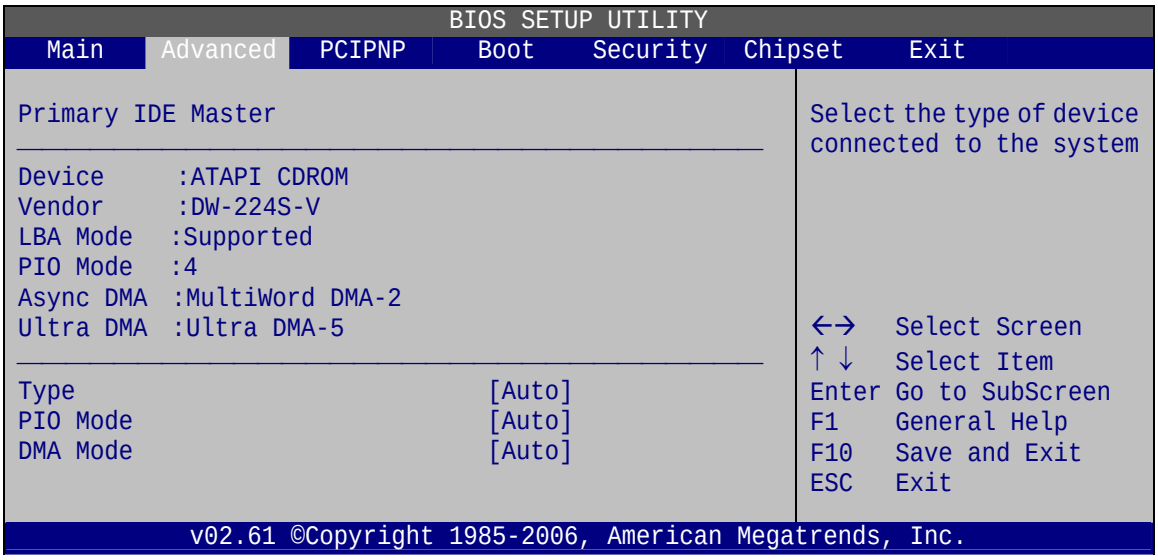
When entering setup, BIOS automatically detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

- Primary IDE Master
- Primary IDE Slave
- Secondary IDE Master
- Secondary IDE Slave
- Third IDE Master

The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected and one of the four BIOS configuration options listed above are selected, the IDE configuration options in the following section appear.

4.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.



BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ **Auto-Detected Drive Parameters**

The “grayed-out” items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

- **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)
- **Type**: Indicates the type of devices a user can manually select
- **Vendor**: Lists the device manufacturer
- **Size**: List the storage capacity of the device.
- **LBA Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- **Block Mode**: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- **PIO Mode**: Indicates the PIO mode of the installed device.
- **Async DMA**: Indicates the highest Asynchronous DMA Mode that is supported.
- **Ultra DMA**: Indicates the highest Synchronous DMA Mode that is supported.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.

- **32Bit Data Transfer**: Enables 32-bit data transfer.

➔ **Type [Auto]**

Use the **Type** BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

➔ **Not Installed**		BIOS is prevented from searching for an IDE disk drive on the specified channel.
➔ **Auto**	**DEFAULT**	The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
➔ **CD/DVD**		The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.
➔ **ARMD**		This option specifies an ATAPI Removable Media Device. These include, but are not limited to: ➔ **ZIP** ➔ **LS-120**

➔ **LBA/Large Mode [Auto]**

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

➔ **Disabled**		BIOS is prevented from using the LBA mode control on the specified channel.
➔ **Auto**	**DEFAULT**	BIOS auto detects the LBA mode control on the specified channel.

➔ **Block (Multi Sector Transfer) [Auto]**

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

➔ **Disabled**		BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.
➔ **Auto**	**DEFAULT**	BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

➔ **PIO Mode [Auto]**

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

➔ **Auto**	**DEFAULT**	BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.
➔ **0**		PIO mode 0 selected with a maximum transfer rate of 3.3MBps
➔ **1**		PIO mode 1 selected with a maximum transfer rate of 5.2MBps
➔ **2**		PIO mode 2 selected with a maximum transfer rate of 8.3MBps
➔ **3**		PIO mode 3 selected with a maximum transfer rate of 11.1MBps
➔ **4**		PIO mode 4 selected with a maximum transfer rate of 16.6MBps (This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

➔ **DMA Mode [Auto]**

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

➔ **Auto**	**DEFAULT**	BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.
➔ **SWDMA0**		Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1MBps
➔ **SWDMA1**		Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2MBps
➔ **SWDMA2**		Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3MBps
➔ **MWDMA0**		Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2MBps
➔ **MWDMA1**		Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3MBps
➔ **MWDMA2**		Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6MBps
➔ **UDMA1**		Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6MBps
➔ **UDMA1**		Ultra DMA mode 1 selected with a maximum data transfer rate of 25MBps
➔ **UDMA2**		Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3MBps
➔ **UDMA3**		Ultra DMA mode 3 selected with a maximum data transfer rate of 44MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
➔ **UDMA4**		Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
➔ **UDMA5**		Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

➔ **S.M.A.R.T [Auto]**

Use the **S.M.A.R.T** option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. **S.M.A.R.T** predicts impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

➔	**Auto**	**DEFAULT**	BIOS auto detects HDD SMART support.
➔	**Disabled**		Prevents BIOS from using the HDD SMART feature.
➔	**Enabled**		Allows BIOS to use the HDD SMART feature

➔ **32Bit Data Transfer [Enabled]**

Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

➔	**Disabled**		Prevents the BIOS from using 32-bit data transfers.
➔	**Enabled**	**DEFAULT**	Allows BIOS to use 32-bit data transfers on supported hard disk drives.

4.3.3 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 6**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.

```
                        BIOS SETUP UTILITY
  Main   Advanced   PCIPNP   Boot   Security   Chipset   Exit

Configure Super I/O Chipset                  Allows BIOS to select
                                             Serial Port Base
Serial Port1 Address          [3F8/IRQ4]     Addresses
Serial Port2 Address          [2F8/IRQ3]
Serial Port3 Address          [3E8]
  Serial Port3 IRQ            [10]
Select RS232 or RS422/RS485   [RS232]
Serial Port4 Address          [2E8]          ←→   Select Screen
  Serial Port4 IRQ            [10]           ↑ ↓  Select Item
                                             Enter Go to SubScreen
                                             F1   General Help
                                             F10  Save and Exit
                                             ESC  Exit

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```

BIOS Menu 6: Super IO Configuration

➔ **Serial Port1 Address [3F8/IRQ4]**

Use the **Serial Port1 Address** option to select the Serial Port 1 base address.

➔ **Disabled**		No base address is assigned to Serial Port 1
➔ **3F8/IRQ4**	**DEFAULT**	Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4
➔ **3E8/IRQ4**		Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
➔ **2E8/IRQ3**		Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port2 Address [2F8/IRQ3]**

Use the **Serial Port2 Address** option to select the Serial Port 2 base address.

➔ **Disabled**		No base address is assigned to Serial Port 2
➔ **2F8/IRQ3**	**DEFAULT**	Serial Port 2 I/O port address is 3F8 and the interrupt address is IRQ3
➔ **3E8/IRQ4**		Serial Port 2 I/O port address is 3E8 and the interrupt address is IRQ4
➔ **2E8/IRQ3**		Serial Port 2 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port3 Address [3E8]**

Use the **Serial Port3 Address** option to select the Serial Port 3 base address.

➔ **Disabled**		No base address is assigned to Serial Port 3
➔ **3E8**	**DEFAULT**	Serial Port 3 I/O port address is 3E8
➔ **2E8**		Serial Port 3 I/O port address is 2E8

➔ **Serial Port3 IRQ [10]**

Use the **Serial Port3 IRQ** option to select the interrupt address for serial port 3.

➔ **10** **DEFAULT** Serial port 3 IRQ address is 10

➔ **Select RS232 or RS422/RS485 [RS232]**

Use the **Select RS232 or RS422/RS485** option to select the Serial Port 2 signaling mode.

➔ **RS232** **DEFAULT** Serial Port 2 signaling mode is RS-232

➔ **RS422/RS485** Serial Port 2 signaling mode is RS-422/RS-485

➔ **Serial Port4 Address [2E8]**

Use the **Serial Port4 Address** option to select the Serial Port 4 base address.

➔ **Disabled** No base address is assigned to Serial Port 4

➔ **3E8** Serial Port 4 I/O port address is 3E8

➔ **2E8** **DEFAULT** Serial Port 4 I/O port address is 2E8

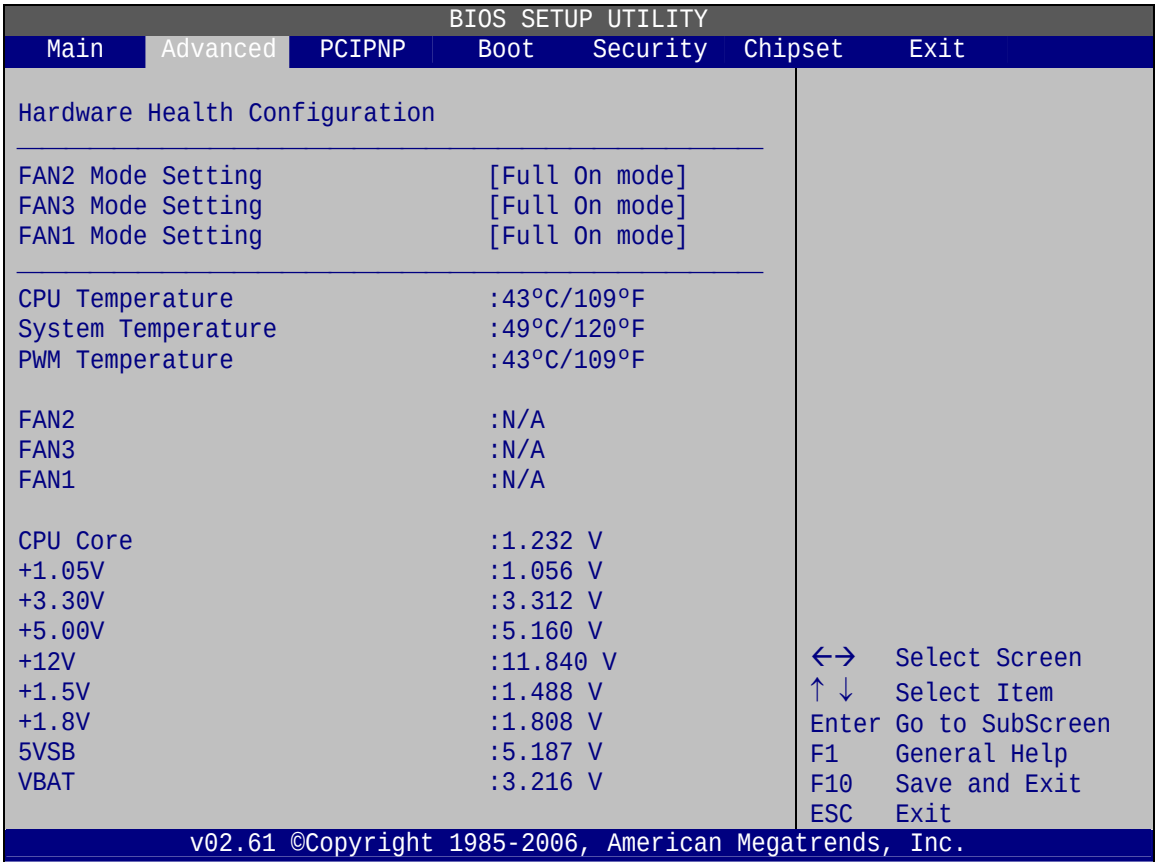
➔ **Serial Port4 IRQ [10]**

Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

➔ **10** **DEFAULT** Serial port 4 IRQ address is 10

4.3.4 Hardware Health Configuration

The **Hardware Health Configuration** menu (**BIOS Menu 7**) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 7: Hardware Health Configuration

➔ **FAN Mode Setting [Full On Mode]**

Use the **CPU FAN Mode Setting** option to configure the second fan.

➔ **Full On Mode**	**DEFAULT**	Fan is on all the time
➔ **Automatic mode**		Fan is off when the temperature is low enough. Parameters must be set by the user.
➔ **PWM Manual mode**		Pulse width modulation set manually

When the **CPU FAN Mode Setting** option is in the **Automatic Mode**, the following parameters can be set.

- CPU Temp. Limit of OFF
- CPU Temp. Limit of On
- CPU Fan Start PWM
- Slope PWM

When the **CPU FAN Mode Setting** option is in the **PWM Manual Mode**, the following parameters can be set.

- CPU Fan PWM control

➔ CPU Temp. Limit of OFF [000]

WARNING:

Setting this value too high may cause the fan to stop when the CPU is at a high temperature and therefore cause the system to be damaged.

The **CPU Temp. Limit of OFF** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **CPU Temp. Limit of OFF** option to select the CPU temperature at which the cooling fan should automatically turn off. To select a value, select the **CPU Temp. Limit of OFF** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **CPU Temp. Limit of On [020]**

WARNING:

Setting this value too high may cause the fan to start only when the CPU is at a high temperature and therefore cause the system to be damaged.

The **CPU Temp. Limit of On** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **CPU Temp. Limit of On** option to select the CPU temperature at which the cooling fan should automatically turn on. When the fan starts, it rotates using the starting pulse width modulation (PWM) specified in the **Fan 3 Start PWM** option below. To select a value, select the **CPU Temp. Limit of On** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- Minimum Value: 0°C
- Maximum Value: 127°C

➔ **CPU Fan Start PWM [070]**

The **Fan 3 Start PWM** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **Fan 3 Start PWM** option to select the PWM mode the fan starts to rotate with after the temperature specified in the **Temperature 3 Limit of Start** is exceeded. The Super I/O chipset supports 128 PWM modes. To select a value, select the **Fan 3 Start PWM** option and enter a decimal number between 000 and 127. The temperature range is specified below.

- PWM Minimum Mode: 0
- PWM Maximum Mode: 127

➔ **Slope PWM [0.5 PWM]**

The **Slope PWM 1** option can only be set if the **CPU FAN Mode Setting** option is set to **Automatic Mode**. Use the **Slope PWM 1** option to select the linear rate at which the PWM mode increases with respect to an increase in temperature. A list of available options is shown below:

- 0.125 PWM
- 0.25 PWM
- 0.5 PWM
- 1 PWM
- 2 PWM
- 4 PWM
- 8 PWM
- 15 PWM

The following system parameters and values are shown. The system parameters that are monitored are:

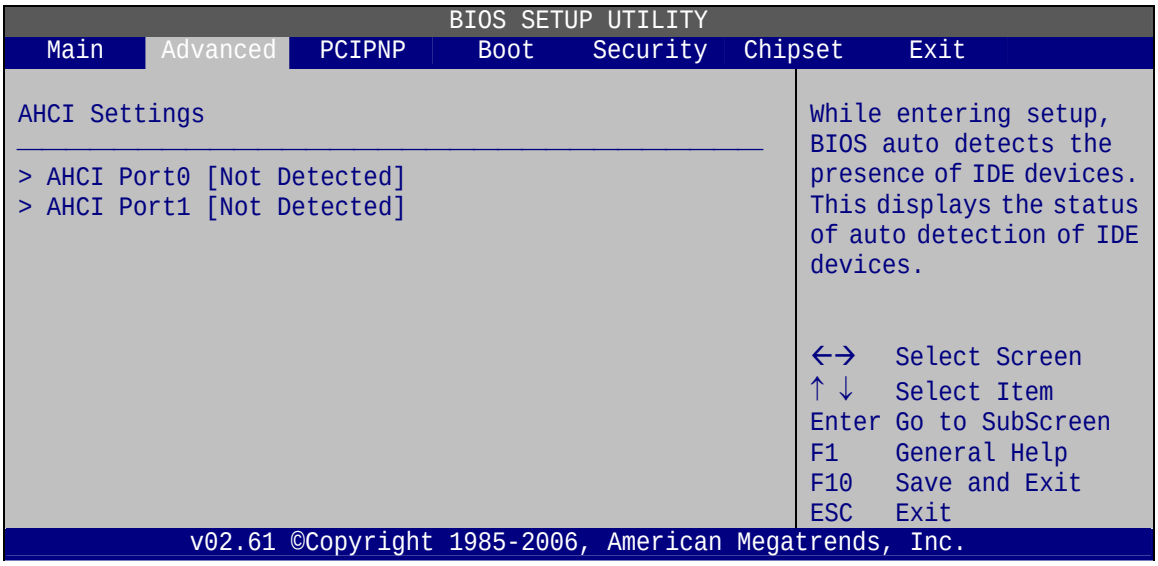
- **System Temperatures**: The following system temperatures are monitored
  - CPU Temperature
  - System Temperature
- **Fan Speeds**: The CPU cooling fan speed is monitored.
  - Fan1 Speed
  - Fan2 Speed
- **Voltages**: The following system voltages are monitored
  - CPU Core
  - +1.05V
  - +3.30V
  - +5.00V
  - +12.0 V
  - +1.5V
  - +1.8V
  - 5VSB
  - VBAT

4.3.5 AHCI Configuration

NOTE:

Advanced Host Controller Interface (AHCI) is a new programming interface for SATA host controllers. AHCI systems do not have master/slave designation for SATA devices, each device is treated as a master, and hardware-assisted native command queuing.

Use the **AHCI Settings** menu (**BIOS Menu 8**) to report on the auto-detection of devices connected to the onboard SATA drive connectors.



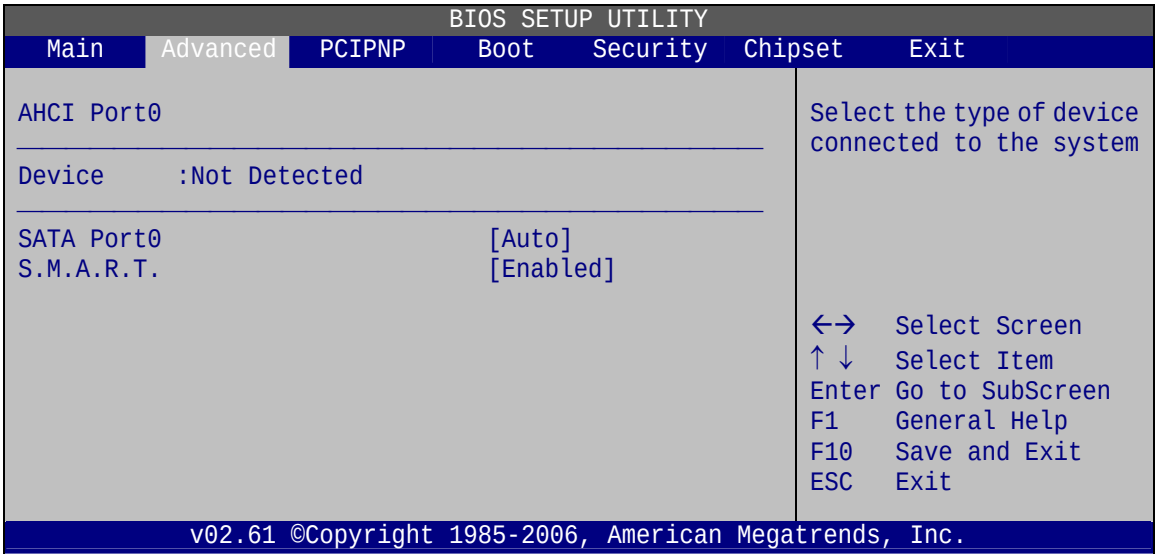
BIOS Menu 8: AHCI Configuration

➔ **AHCI Port n [Not Detected]**

Use the **AHCI Port n** BIOS option to check which AHCI (Advanced Host Controller Interface) devices are detected on a specified SATA drive connector. If a device is detected, selecting the BIOS option, e.g. "**AHCI Port 0**" opens a new window.

4.3.5.1 AHCI Port n

Use the **AHCI Port n** configuration menu (**BIOS Menu 9**) to configure the drive connected to SATA connector n.



BIOS Menu 9: AHCI Port n Configuration Menu

➔ **SATA Port n [Auto]**

Use the **SATA Port n** option to enable the system to auto-detect the type of drive connected to SATA drive connector n.

➔ **S.M.A.R.T [Enabled]**

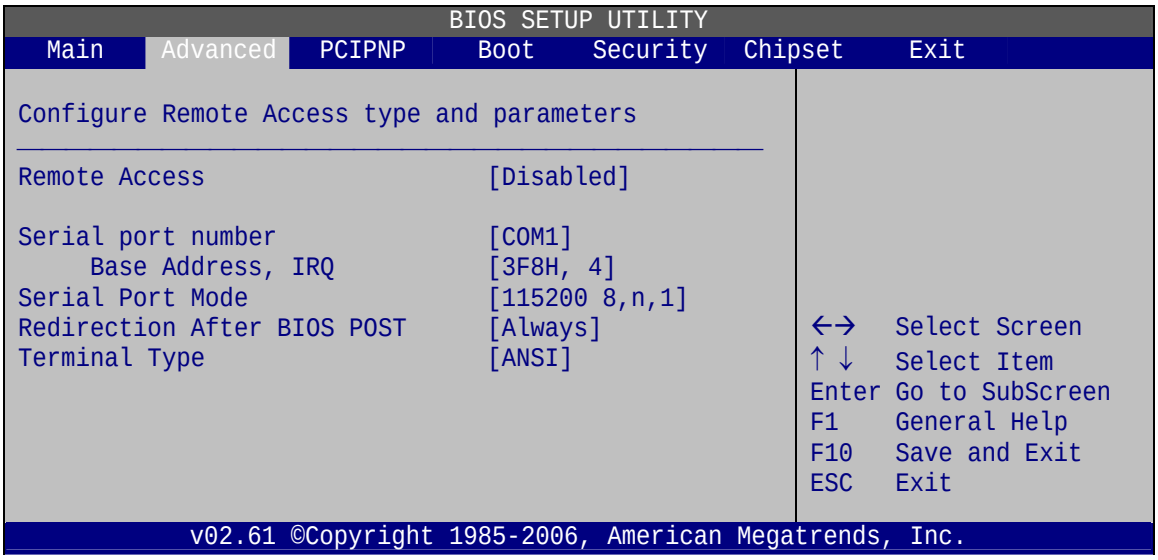
Use the **S.M.A.R.T** option to enable S.M.A.R.T (Self-Monitoring, Analysis, and Reporting Technology) on the drive connected to SATA drive connector n.

➔ **Enabled** **DEFAULT** S.M.A.R.T is enabled on the drive connected to SATA drive connector n on the system

➔ **Disabled** S.M.A.R.T is disabled on the drive connected to SATA drive connector n on the system

4.3.6 Remote Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 10**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Configure Remote Access type and parameters
Remote Access [Disabled]
Serial port number [COM1]
Base Address, IRQ [3F8H, 4]
Serial Port Mode [115200 8,n,1]
Redirection After BIOS POST [Always]
Terminal Type [ANSI]
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 10: Remote Access Configuration

➔ **Remote Access [Disabled]**

Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

➔ **Disabled** **DEFAULT** Remote access is disabled.

➔ **Enabled** Remote access configuration options:

- ➔ **Serial Port Number**
- ➔ **Serial Port Mode**
- ➔ **Redirection after BIOS POST**
- ➔ **Terminal Type**

These configuration options are discussed below.

➔ **Serial Port Number [COM1]**

Use the **Serial Port Number** option to select the serial port used for remote access.

➔ **COM1**	**DEFAULT**	System is remotely accessed through COM1
➔ **COM2**		System is remotely accessed through COM2
➔ **COM3**		System is remotely accessed through COM3
➔ **COM4**		System is remotely accessed through COM4
➔ **COM5**		System is remotely accessed through COM5

NOTE: Make sure the selected COM port is enabled through the Super I/O configuration menu.

➔ **Base Address, IRQ [3F8h,4]**

The **Base Address, IRQ** option cannot be configured and only shows the interrupt address of the serial port listed above.

➔ **Serial Port Mode [115200 8,n,1]**

Use the **Serial Port Mode** option to select baud rate through which the console redirection is made. The following configuration options are available

- 115200 8,n,1 **DEFAULT**
- 57600 8,n,1
- 38400 8,n,1
- 19200 8,n,1
- 09600 8,n,1

NOTE:

Identical baud rate setting musts be set on the host (a management computer running a terminal software) and the slave

➔ **Redirection After BIOS POST [Always]**

Use the **Redirection After BIOS POST** option to specify when console redirection should occur.

➔ **Disabled**		The console is not redirected after POST
➔ **Boot Loader**		Redirection is active during POST and during Boot Loader
➔ **Always**	**DEFAULT**	Redirection is always active (Some OSes may not work if set to Always)

➔ **Terminal Type [ANSI]**

Use the **Terminal Type** BIOS option to specify the remote terminal type.

➔ **ANSI**	**DEFAULT**	The target terminal type is ANSI
➔ **VT100**		The target terminal type is VT100
➔ **VT-UTF8**		The target terminal type is VT-UTF8

4.3.7 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 11**) to read USB configuration information and configure the USB settings.

```
                        BIOS SETUP UTILITY
  Main   Advanced   PCIPNP   Boot   Security   Chipset   Exit

USB Configuration                                  Disabled
-------------------------------------------------- Enabled
Module Version - 2.24.3-13.4

USB Devices Enabled:
            None

                                                   ←→   Select Screen
USB Functions                  [Enabled]           ↑ ↓  Select Item
USB 2.0 Controller             [Enabled]           Enter Go to SubScreen
Legacy USB Support             [Enabled]           F1    General Help
USB 2.0 Controller Mode        [HiSpeed]           F10   Save and Exit
                                                   ESC   Exit

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```

BIOS Menu 11: USB Configuration

➔ **USB Functions [Enabled]**

Use the **USB Function** option to enable or disable the USB controllers.

➔ **Disabled**		USB controllers are enabled
➔ **Enabled**	**DEFAULT**	USB controllers are disabled

➔ **USB 2.0 Controller [Enabled]**

The **USB 2.0 Controller** BIOS option is enabled.

➔ **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔ **Disabled**		Legacy USB support disabled
➔ **Enabled**	**DEFAULT**	Legacy USB support enabled
➔ **Auto**		Legacy USB support disabled if no USB devices are connected

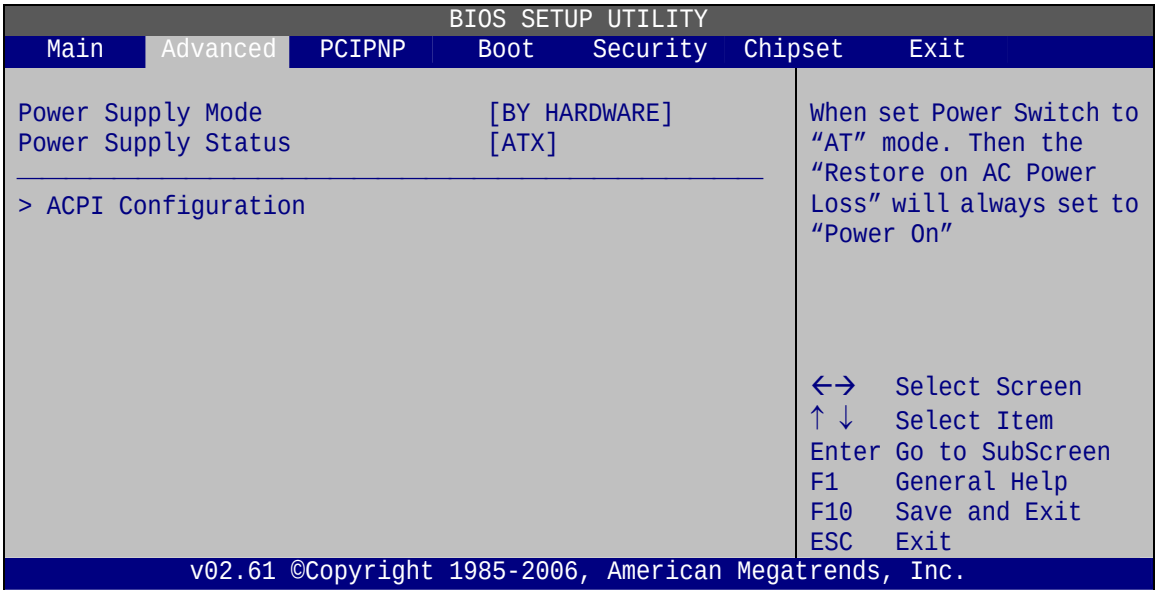
➔ **USB2.0 Controller Mode [HiSpeed]**

The **USB2.0 Controller Mode** BIOS option sets the speed of the USB2.0 controller.

➔ **FullSpeed**		The controller is capable of operating at full speed 12 Mb/s
➔ **HiSpeed**	**DEFAULT**	The controller is capable of operating at high speed 480 Mb/s

4.3.8 Power Configuration

The **Power Configuration** menu (**BIOS Menu 12**) configures the Advanced Configuration and Power Interface (ACPI) options.



BIOS Menu 12: ACPI Configuration

4.4 PCI/PnP

Use the PCI/PnP menu (**BIOS Menu 13**) to configure advanced PCI and PnP settings.

WARNING:

Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

Advanced PCI/PnP Settings                    Available: Specified IRQ
_____________________________________________ is available to be use
WARNING: Setting wrong values in below sections the PCI/PnP devices
         may cause system to malfunction     Reserved: Specified IRQ
IRQ3                          [Reserved]     is reserved for use by
IRQ4                          [Reserved]     legacy ISA devices
IRQ5                          [Available]
IRQ7                          [Available]
IRQ9                          [Available]
IRQ10                         [Reserved]
IRQ11                         [Available]
IRQ14                         [Available]
IRQ15                         [Available]

DMA Channel 0                 [Available]    ←→   Select Screen
DMA Channel 1                 [Available]    ↑ ↓  Select Item
DMA Channel 3                 [Available]    Enter Go to SubScreen
DMA Channel 5                 [Available]    F1    General Help
DMA Channel 6                 [Available]    F10   Save and Exit
DMA Channel 7                 [Available]    ESC   Exit

Reserved Memory Size          [Disabled]
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```

BIOS Menu 13: PCI/PnP Configuration

➔ **IRQ# [Available]**

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available** **DEFAULT** The specified IRQ is available to be used by PCI/PnP devices

➔ **Reserved** The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

➔ **DMA Channel# [Available]**

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

➔ **Available** **DEFAULT** The specified DMA is available to be used by PCI/PnP devices

➔ **Reserved** The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

- DM Channel 0
- DM Channel 1
- DM Channel 3
- DM Channel 5
- DM Channel 6
- DM Channel 7

➔ **Reserved Memory Size [Disabled]**

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

➔	**Disabled**	**DEFAULT**	No memory block reserved for legacy ISA devices
➔	**16K**		16KB reserved for legacy ISA devices
➔	**32K**		32KB reserved for legacy ISA devices
➔	**64K**		64KB reserved for legacy ISA devices

4.5 Boot

Use the Boot menu (**BIOS Menu 14**) to configure system boot options.

```
                        BIOS SETUP UTILITY
  Main   Advanced   PCIPNP   Boot   Security   Chipset   Exit

Boot Settings                                  Configure settings
-------------------------------------------    during system boot.
> Boot Settings Configuration

> Boot Device Priority
> Hard Disk Drives
> CD/DVD Drives

                                               ←→   Select Screen
                                               ↑ ↓  Select Item
                                               Enter Go to SubScreen
                                               F1   General Help
                                               F10  Save and Exit
                                               ESC  Exit

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```
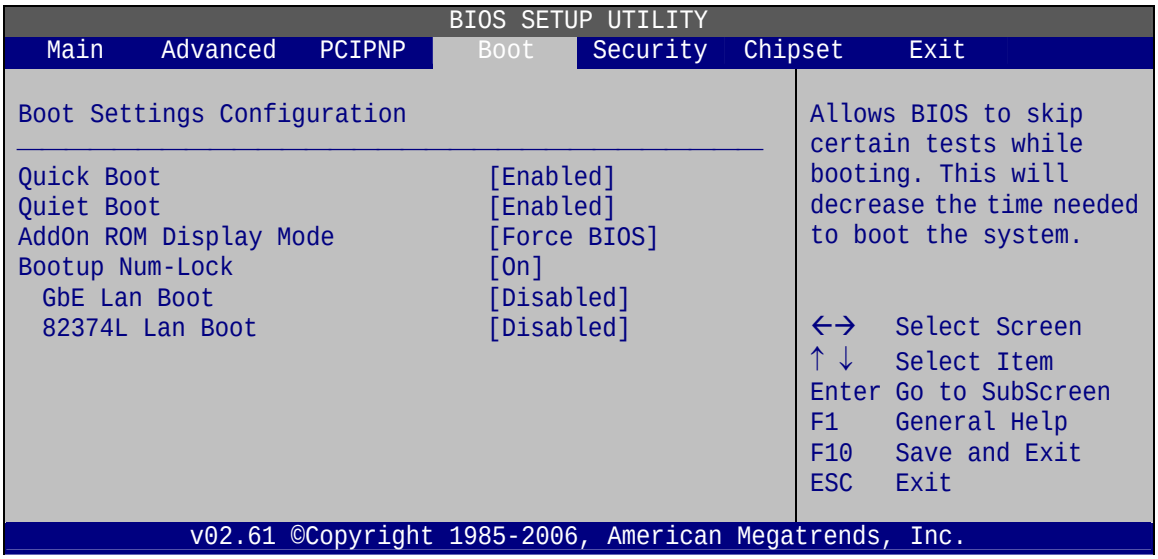

BIOS Menu 14: Boot

4.5.1 Boot Settings Configuration

Use the Boot Settings Configuration menu to configure advanced system boot options.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Boot Settings Configuration
Quick Boot [Enabled]
Quiet Boot [Enabled]
AddOn ROM Display Mode [Force BIOS]
Bootup Num-Lock [On]
GbE Lan Boot [Disabled]
82374L Lan Boot [Disabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 15: Boot Settings Configuration

➔ **Quick Boot [Enabled]**

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

➔ **Disabled**		No POST procedures are skipped
➔ **Enabled**	**DEFAULT**	Some POST procedures are skipped to decrease the system boot time

➔ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**		Normal POST messages displayed
➔ **Enabled**	**DEFAULT**	OEM Logo displayed instead of POST messages

➔ **AddOn ROM Display Mode [Force BIOS]**

The **AddOn ROM Display Mode** option allows add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS** **DEFAULT** Allows the computer system to force a third party BIOS to display during system boot.

➔ **Keep Current** Allows the computer system to display the information during system boot.

➔ **Bootup Num-Lock [On]**

The **Bootup Num-Lock** BIOS option allows the Number Lock setting to be modified during boot up.

➔ **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **GbE LAN Boot [Disabled]**

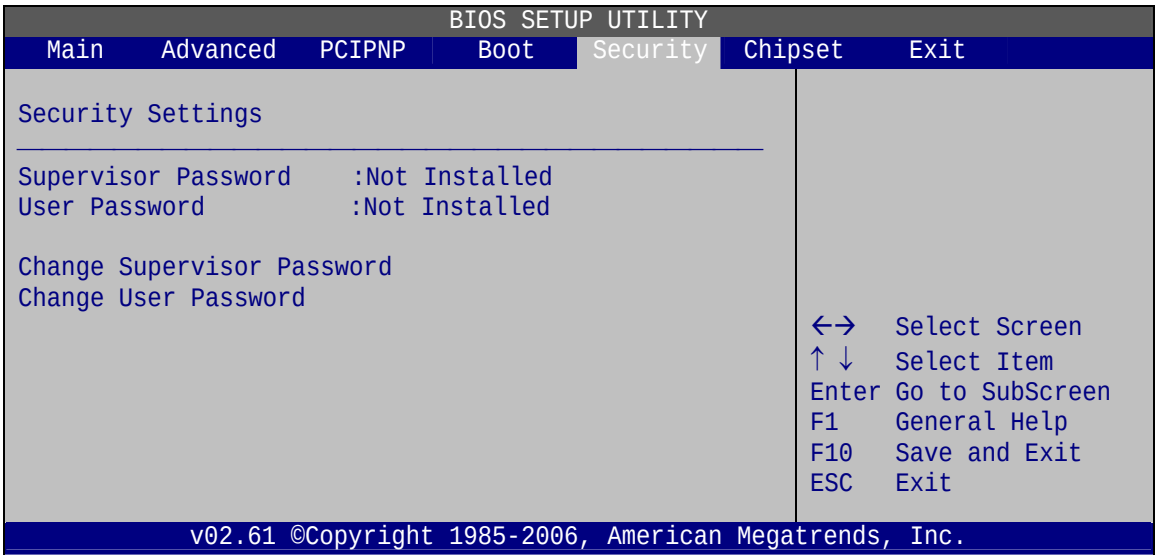
The **GbE LAN Boot** option enables the system to be booted from a remote system.

➔ **Enabled** Can be booted from a remote system through the LAN

➔ **Disabled** **DEFAULT** Cannot be booted from a remote system through the LAN

4.6 Security

Use the Security menu (**BIOS Menu 16**) to set system and user passwords.



BIOS Menu 16: Security

➔ **Change Supervisor Password**

Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

➔ **Change User Password**

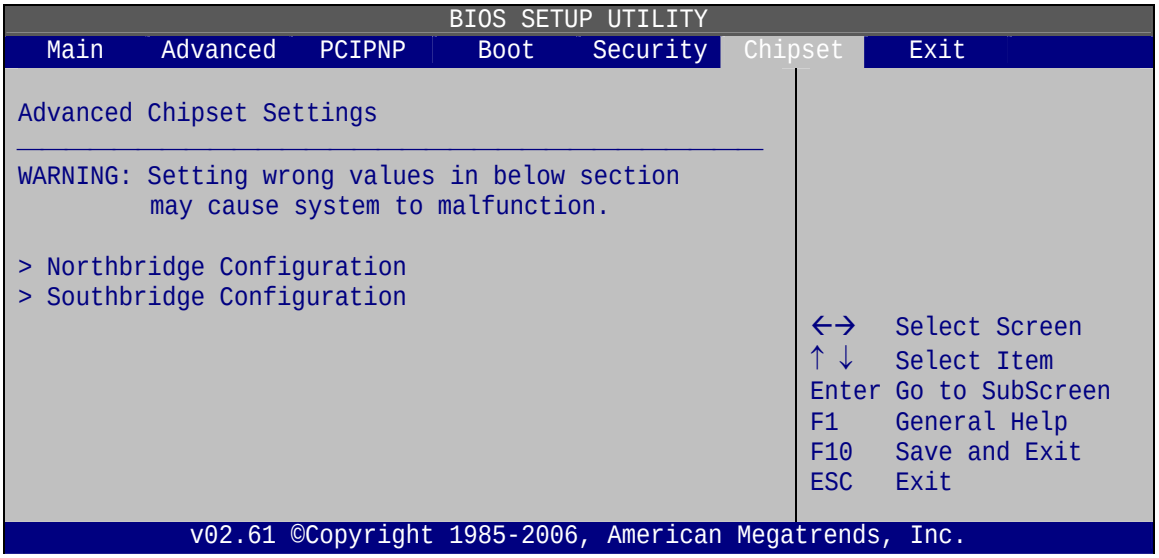
Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

4.7 Chipset

Use the **Chipset** menu (**BIOS Menu 17**) to access the Northbridge and Southbridge configuration menus

WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Advanced Chipset Settings
WARNING: Setting wrong values in below section
may cause system to malfunction.
> Northbridge Configuration
> Southbridge Configuration
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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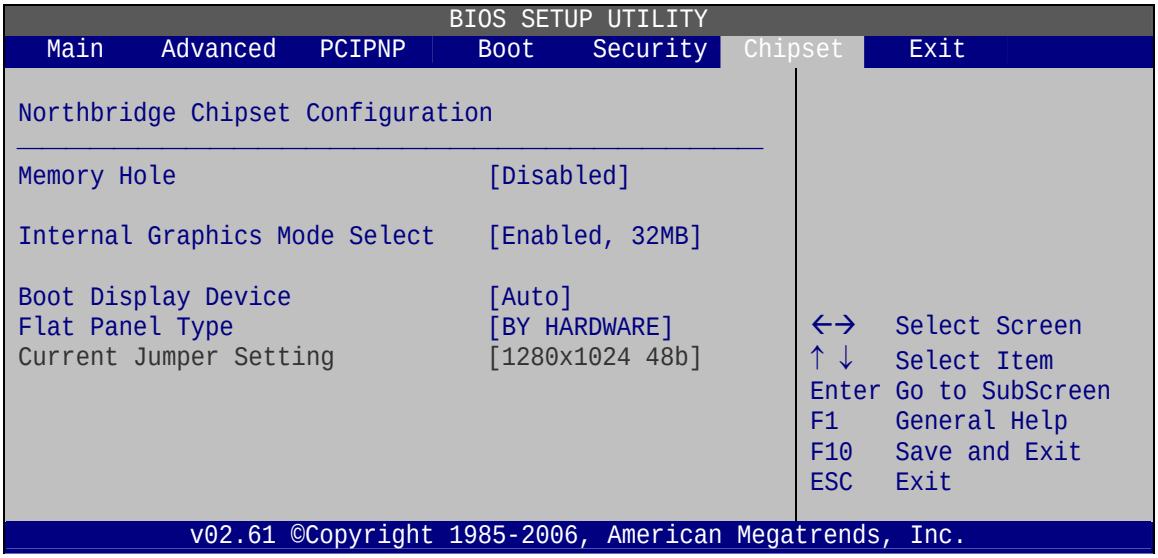
BIOS Menu 17: Chipset

4.7.1 Northbridge Chipset Configuration

Use the **Northbridge Chipset Configuration** menu (**BIOS Menu 18**) to configure the Northbridge chipset settings.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Northbridge Chipset Configuration
Memory Hole [Disabled]
Internal Graphics Mode Select [Enabled, 32MB]
Boot Display Device [Auto]
Flat Panel Type [BY HARDWARE]
Current Jumper Setting [1280x1024 48b]
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 18:Northbridge Chipset Configuration

➔ **Memory Hole [Disabled]**

Use the **Memory Hole** option to reserve memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

➔ **Disabled**	**DEFAULT**	Memory is not reserved for ISA expansion cards
➔ **15MB – 16MB**		Between 15MB and 16MB of memory is reserved for ISA expansion cards

➔ **Internal Graphics Mode Select [Enable, 32MB]**

The **Internal Graphic Mode Select** option determines the amount of system memory that can be used by the internal graphics device.

➔ **Disable**

➔ **Enable, 32MB** 32MB of memory used by internal graphics device

➔ **Enable, 64MB** **DEFAULT** 64MB of memory used by internal graphics device

➔ **Enable, 128MB** 128MB of memory used by internal graphics device

➔ **Boot Display Device [Auto]**

Use the **Boot Display Device** option to select the display device used by the system when it boots. Configuration options are listed below.

- Auto **DEFAULT**
- CRT
- LVDS

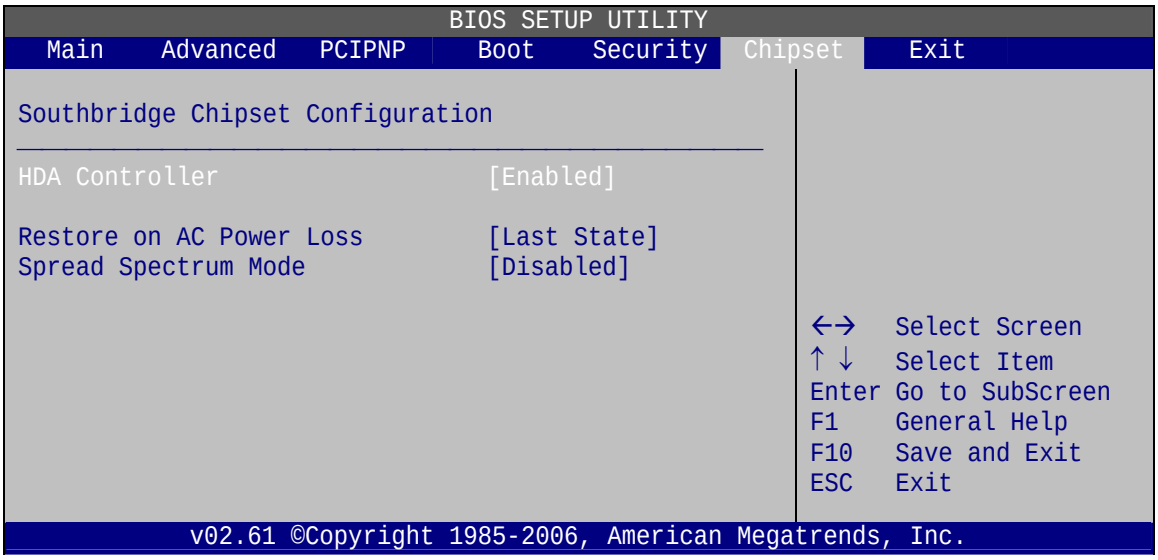
➔ **Flat Panel Type [BY HARDWARE]**

Use the **Flat Panel Type** option to select the type of flat panel connected to the system. Configuration options are listed below.

- 640x480 18b
- 800x600 18b
- 1024x768 18b
- 1024x768 24b
- 1280x1024 48b
- 1600x1200 48b
- BY HARDWARE

4.7.2 Southbridge Configuration

Use the **Southbridge Configuration** menu (**BIOS Menu 19**) to configure the Southbridge chipset.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Southbridge Chipset Configuration
HDA Controller [Enabled]
Restore on AC Power Loss [Last State]
Spread Spectrum Mode [Disabled]
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 19: Southbridge Chipset Configuration

➔ **HDA Controller [Enabled]**

The **HDA Controller** option enables or disables the audio controller.

➔	**Enabled**	**DEFAULT**	The on-board High Definition audio controller is enabled.
➔	**Disabled**		The on-board audio controller is disabled.

➔ **Spread Spectrum Mode [Disabled]**

Use the **Spread Spectrum** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

➔	**Disabled**	**DEFAULT**	EMI not reduced
➔	**Enabled**		EMI reduced

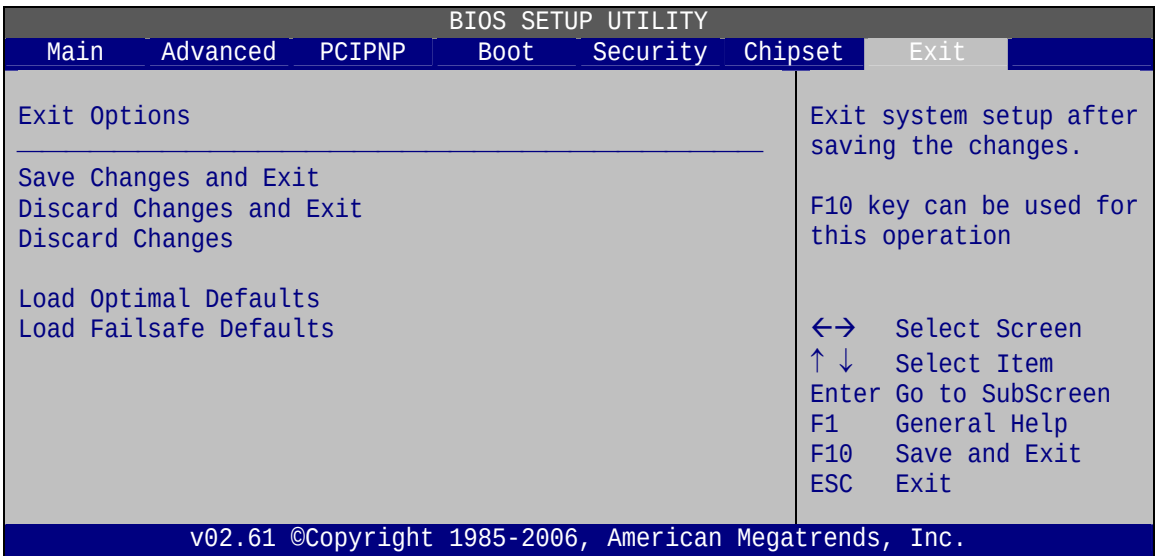
➔ **Restore on AC Power Loss [Last State]**

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

➔ **Power Off**		The system remains turned off
➔ **Power On**		The system turns on
➔ **Last State**	**DEFAULT**	The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

4.8 Exit

Use the **Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.


BIOS SETUP UTILITY
Main Advanced PCIPNP Boot Security Chipset Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation
←→ Select Screen
↑ ↓ Select Item
Enter Go to SubScreen
F1 General Help
F10 Save and Exit
ESC Exit
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BIOS Menu 20:Exit

➔ **Save Changes and Exit**

Use the **Save Changes and Exit** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

➔ **Discard Changes and Exit**

Use the **Discard Changes and Exit** option to exit the BIOS configuration setup program without saving the changes made to the system.

➔ **Discard Changes**

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

➔ **Load Optimal Defaults**

Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

➔ **Load Failsafe Defaults**

Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

Chapter

5

iSMM

5.1 iSMM Introduction

The IEI Intelligent System Management Module (iSMM) application monitors and shows the voltage, fan speed, temperature, and watchdog time, DIO and cash drawer information of the system. The users can control the setting in the following pages:

- Voltage Page
- Fan Page
- Temperature Page
- DIO Page
- WDT Page
- Cashdrawer Page

5.2 iSMM Installation

Follow the steps below to install the iSMM application.

Step 1: Insert the utility CD that came with the AFL-517A-GM45 into a CD drive connected to the system.

Step 2: Click the **setup.exe** in the IEI iSMM folder.

Step 3: The welcome screen in **Figure 5-1** appears.

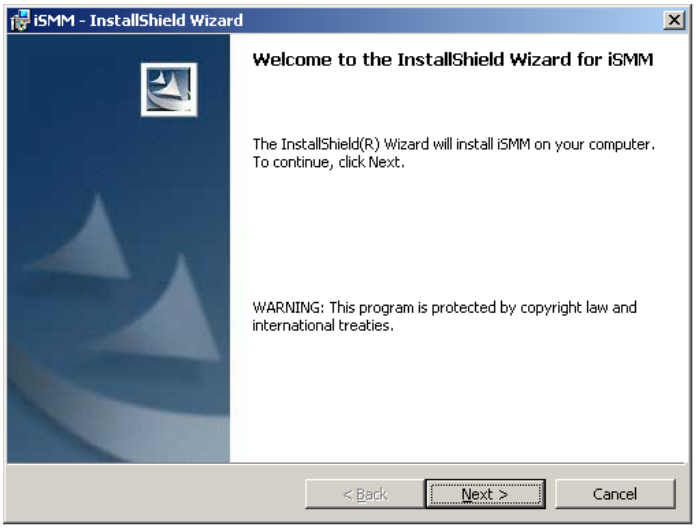
iSMM - InstallShield Wizard
Welcome to the InstallShield Wizard for iSMM
The InstallShield(R) Wizard will install iSMM on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

Figure 5-1: iSMM Installation Welcome Screen

Step 4: Click **NEXT** to continue the installation process.

Step 5: The customer information in **Figure 5-2** appears.

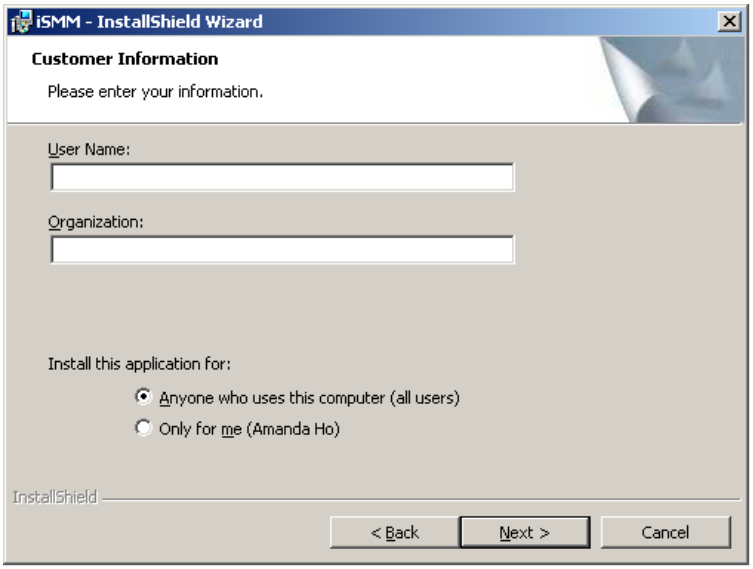

Figure 5-2: iSMM Installation Customer Information

Step 6: Fill out the information and click **NEXT**.

Step 7: The Ready to Install the Program in **Figure 5-3** appears.

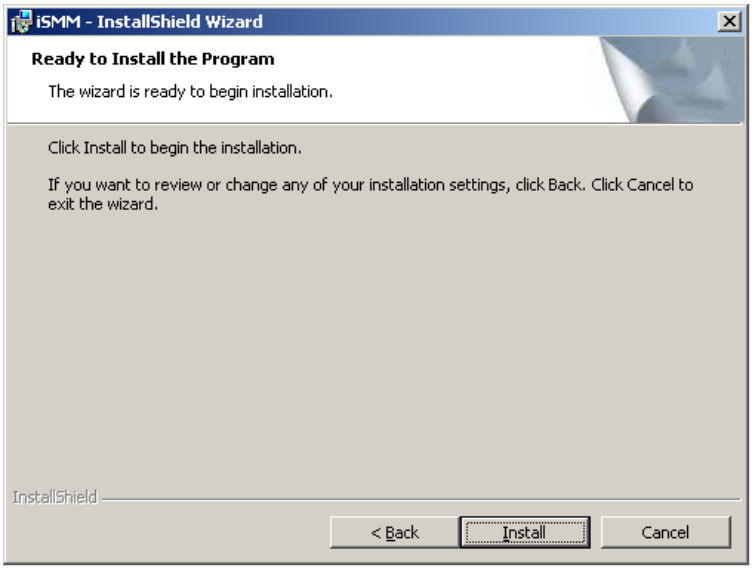
iSMM - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

Figure 5-3: Ready to Install the Program Window

Step 8: Click **NEXT** to start the software installation.

Step 9: After the driver installation process is complete, a confirmation screen appears.

Step 10: Click **FINISH** to complete the software installation.

5.3 Voltage Page

The IEI iSMM application monitors and shows the current system voltages on the Voltage Page (**Figure 5-4**). The following sections describe the Voltage Page in details.

Figure 5-4: Voltage Page

5.3.1 Refresh Time Setting

The iSMM refreshes the voltage values according to the refresh time period set by the user. Follow the steps below to set the refresh time:

Step 1: Click on the Voltage Page tab.

Step 2: Entering a value beside the **Refresh time (Sec)** (**Figure 5-5**).

Step 3: Click **apply** (**Figure 5-5**).

Figure 5-5: Voltage Refresh Time Setting

5.3.2 High Limit Value and Low Limit Value Setting

The high limit value and low limit value of each voltage can be set by the user. When the voltage is greater than the high limit value or smaller than the low limit value, the voltage value are displayed in red. For example, the VBAT voltage (3.22V) shows in red in **Figure 5-4** since the current VBAT voltage is greater than the high limit value (3.2V).

To set the high limit value or low limit value, follow the steps below.

Step 1: Double click a high limit value or a low limit value to enter the new value (**Figure 5-6**).

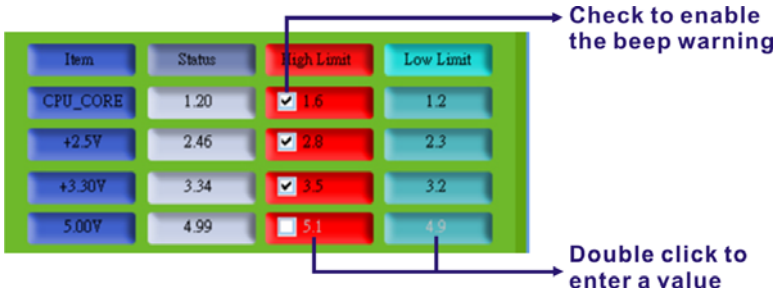

Figure 5-6: Voltage Page – High Limit and Low Limit

Step 2: Check the high or low limit value to have the system use the beep warning when the specified system voltage is greater or smaller than the high limit or low limit (**Figure 5-6**). (Make sure to enable beep/audio alarm on the Load/Save Page. Refer to **Section 5.8**)

5.4 Fan Page

The IEI iSMM application monitors and shows the fan speeds on the Fan Page (**Figure 5-7**). The following sections describe the Fan Page in details.

Figure 5-7: Fan Page

5.4.1 Refresh Time Setting

The iSMM refreshes the fan speed values according to the refresh time period set by the user. Follow the steps below to set the refresh time:

Step 1: Click on the Fan Page tab.

Step 2: Entering a value beside the **Refresh time (Sec)** (**Figure 5-8**).

Step 3: Click **apply** (**Figure 5-8**).

Figure 5-8: Fan Speed Refresh Time Setting

5.4.2 High Limit Value and Low Limit Value Setting

The high limit value and low limit value of each fan speed can be set by the user. When the fan speed is greater than the high limit value or smaller than the low limit value, the fan speed value are displayed in red. For example, the CPU fan speed (1920) shows in red in **Figure 5-7** since the current CPU speed is lower than the low limit value (2000).

To set the high limit value or low limit value, follow the steps below.

Step 1: Double click a high limit value or a low limit value to enter the new value (**Figure 5-9**).

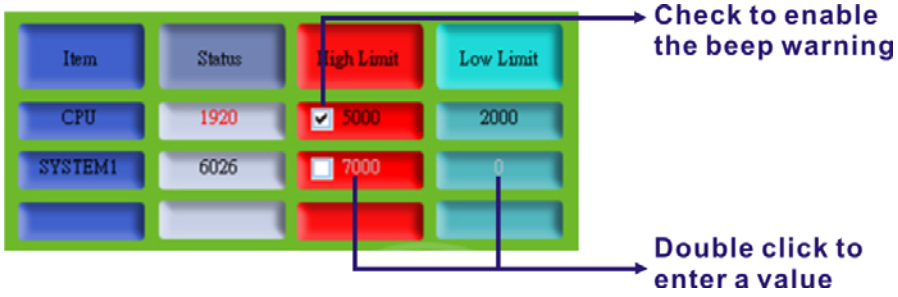

Figure 5-9: Fan Page – High Limit and Low Limit

Step 2: Check the high or low limit value to have the system use the beep warning when the specified fan speed is greater or smaller than the high limit or low limit (**Figure 5-9**). (Make sure to enable beep/audio alarm on the Load/Save Page. Refer to **Section 5.8**)

5.4.3 Smart Fan Setting

The Smart Fan Setting page is for advanced fan setting. The user can enable or disable the specific fan. When the fan is enabled, the user can control the fan in three different modes (On/Off Mode, PWM Mode and Automatic Mode).

5.4.3.1 On/Off Mode

In the On/Off Mode, choose **Off** or **On** to turn off or turn on the fan. Click **apply** or **ok** when finished.

Figure 5-10: Smart Fan Setting – On/Off Mode

5.4.3.2 PWM Mode

In the PWM Mode, the user can set the PWM value from 0 to 127 by entering a value (**Figure 5-11**). To set the value, double click the number and enter a new value. Click **apply** or **ok** when finished.

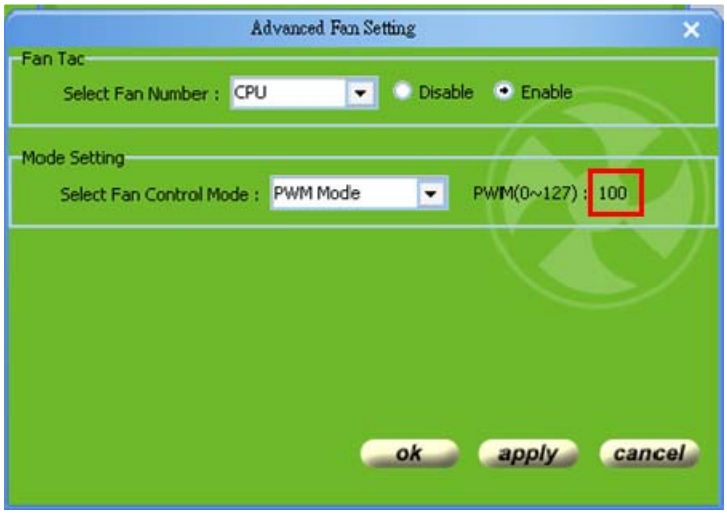

Figure 5-11: Smart Fan Setting – PWM Mode

5.4.3.3 Automatic Mode

In the Automatic Mode, the user can set the temperature that decides the fan activity. The following value can be set (**Figure 5-12**):

- Fan Start (°C): the fan starts when the temperature reaches the set value
- Fan Off (°C): the fan turns off when the temperature reaches the set value
- Full Speed (°C): the fan runs at full speed when the temperature reaches the set value
- Start PWM Value (0~127): the initial PWM value when the fan starts
- Slope (PWM Value (add/°C): the PWM value added per degree Celsius (°C) of temperature increase when the fan start running

To set the value, double click the number and enter a new value. Click **apply** or **ok** when finished.

Figure 5-12: Smart Fan Setting – Automatic Mode

5.5 Temperature Page

The IEI iSMM application monitors the current CPU temperature and system temperature and shows the temperature on the Temperature Page (**Figure 5-13**). The following sections describe the Temperature Page in details.

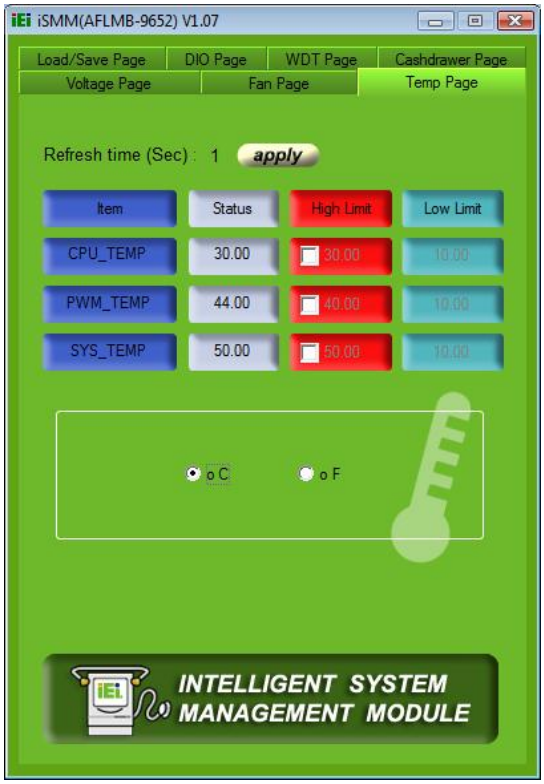

Figure 5-13: Temperature Page

5.5.1 Refresh Time Setting

The iSMM refreshes the CPU and system temperature according to the refresh time period set by the user. Follow the steps below to set the refresh time:

Step 1: Click on the Temperature Page tab.

Step 2: Entering a value beside the **Refresh time (Sec)** (**Figure 5-14**).

Step 3: Click apply (**Figure 5-14**).

Figure 5-14: Temperature Refresh Time Setting

5.5.2 High Limit Value and Low Limit Value Setting

The high limit value and low limit value of each temperature can be set by the user. When the temperature is greater than the high limit value or lower than the low limit value, the temperature value are displayed in red. For example, the SYSTEM1 temperature (48) shows in red in **Figure 5-13** since the current system temperature is greater than the high limit value (40). The temperature scale can be changed from Celsius scale (°C) to Fahrenheit scale (°F).

To set the high limit value or low limit value, follow the steps below.

Step 1: Double click a high limit value or a low limit value to enter the new value (**Figure 5-15**).

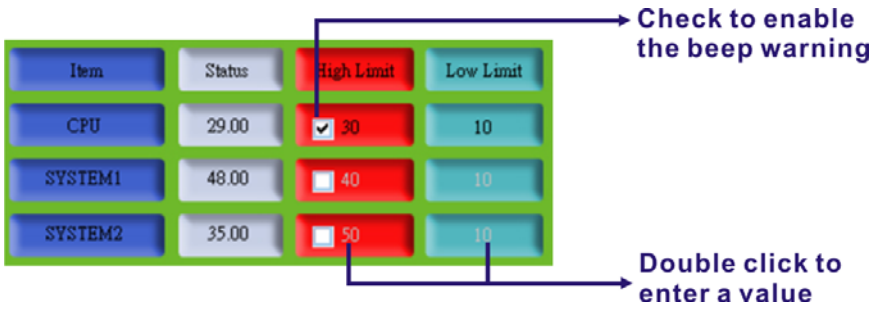

Figure 5-15: Temperature Page – High Limit and Low Limit

Step 2: Check the high or low limit value to have the system use the beep warning when the specified temperature is greater or lower than the high limit or low limit (**Figure 5-15**). (Make sure to enable beep/audio alarm on the Load/Save Page. Refer to **Section 5.8**). (Make sure to enable beep/audio alarm on the Load/Save Page.)

5.6 Cash Drawer Page

The Cashdrawer Page of the IEI iSMM application allows users to view and control the cash drawers connected to the AFL-517A-GM45. **Figure 5-17** shows an example of the status of the cash drawers:

- No. 1 cash drawer: open
- No. 2 cash drawer: closed

The user can change the status of the cash drawer by clicking the image.

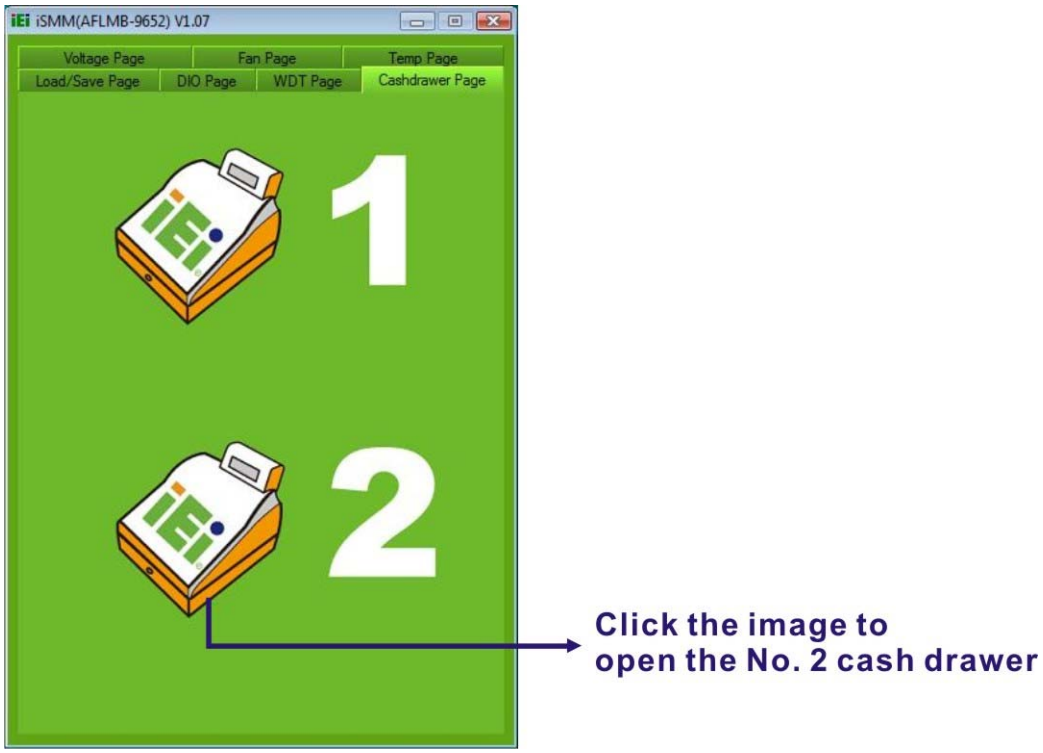

Figure 5-16: Cash Drawer Page

5.7 Watchdog Timer Page

The IEI iSMM application allows users to set watchdog timer on the WDT Page (**Figure 5-17**).

Figure 5-17: WDT Page

Set Timeout	**Set the watchdog timer value. The value is a period of time that the system will shut down if the timer is not reset in that period of time.**
Start	**Click to start the watchdog timer**
Stop	**Click to stop the watchdog timer**
Auto refresh	**The watchdog timer auto resets before timeout.**

5.8 DIO Page

The IEI iSMM application monitors the current voltage of the digital input and digital output and shows the information on the DIO Page (**Figure 5-18**). The digital output information can be set and written to an internal register to control the state driven on the output pin.

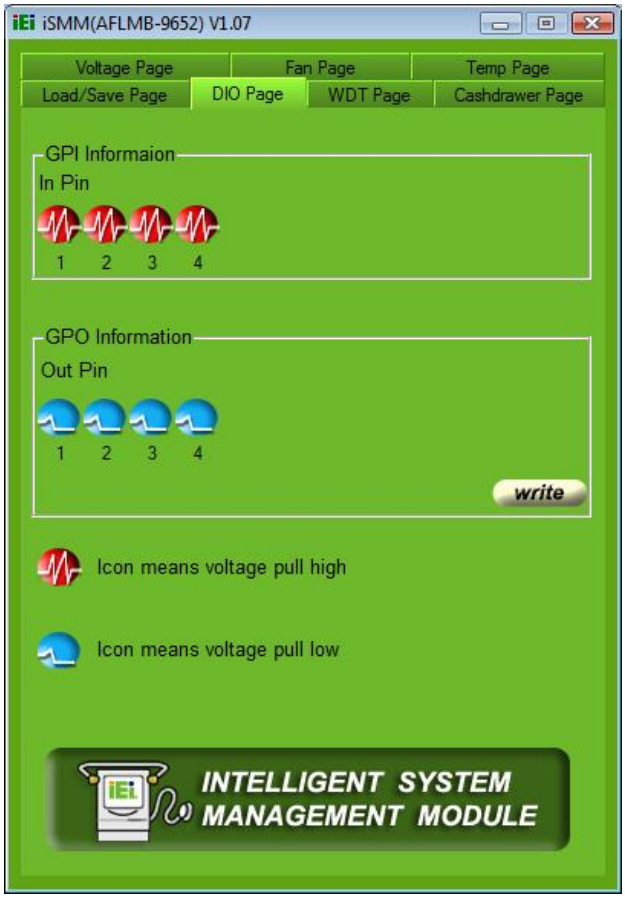

Figure 5-18: DIO Page

5.8.1 GPO Information Setting

Follow the steps below to set the GPO.

Step 1: Click the DIO Page.

Step 2: Click the icon in the GPO Information section to change the output pin state.

(: voltage pull high) (: voltage pull low)

Step 3: Click **Write** to write to an internal register to control the state after finish setting the output pin.

5.9 Load/Save Page

The IEI iSMM application allows the user to save the settings of all the high limit/low limit values and smart fan setting as an ***.ini** file. Thus, the user can load the setting easily to the iSMM if necessary. The saving and loading action is done from the Load/Save Page of the iSMM (**Figure 5-19**). This page can also enable the beep/audio alarm.

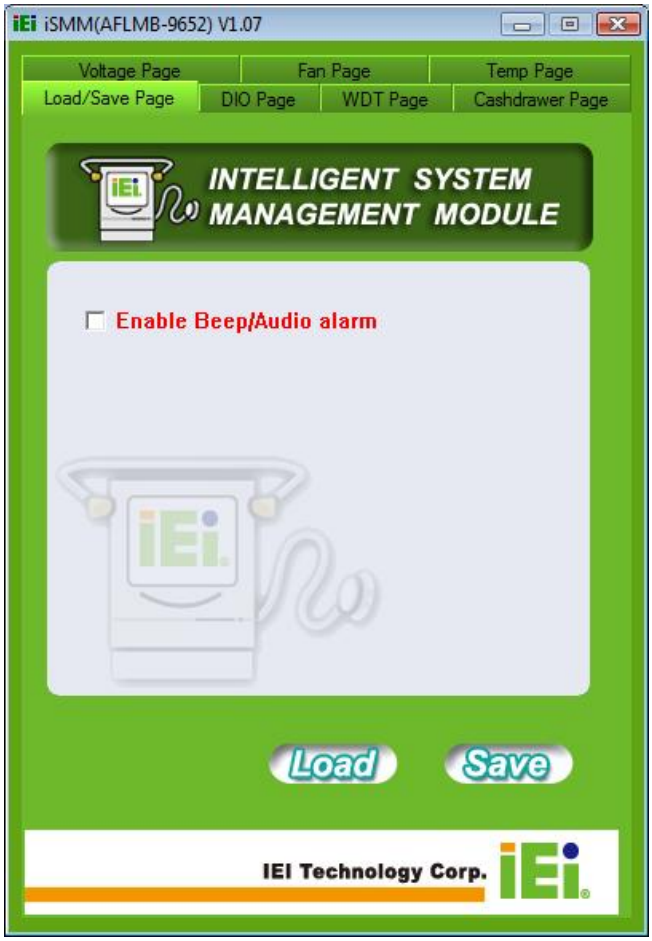

Figure 5-19: Load/Save Page

Appendix

A

Safety Precautions

WARNING:

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the AFL-517A-GM45.

A.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

A.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***Follow the electrostatic precautions*** outlined below whenever the AFL-517A-GM45 is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the AFL-517A-GM45 is being installed, moved or modified.
- ***Do not apply voltage levels that exceed the specified voltage range***. Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if the AFL-517A-GM45 chassis is opened when the AFL-517A-GM45 is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the AFL-517A-GM45.
- ***If considerable amounts of dust, water, or fluids enter the AFL-517A-GM45***, turn off the power supply immediately, unplug the power cord, and contact the AFL-517A-GM45 vendor.
- **DO NOT** do the following:
  - **DO NOT** drop the AFL-517A-GM45 onto a hard surface.
  - **DO NOT** strike or exert excessive force onto the LCD panel.
  - **DO NOT** touch any of the LCD panels with a sharp object
  - **DO NOT** use the AFL-517A-GM45 in a site where the ambient temperature exceeds the rated temperature

A.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the AFL-517A-GM45 may result in permanent damage to the AFL-517A-GM45 and sever injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the AFL-517A-GM45. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the AFL-517A-GM45 is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding***: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring or working with an electrical component, place it on an antic-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component***: When handling the electrical component, hold the electrical component by its edges.

A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the AFL-517A-GM45, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the AFL-517A-GM45, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior does not require cleaning. Keep fluids away from the interior.
- Be careful not to damage the small, removable components inside.
- Turn off before cleaning.
- Never drop any objects or liquids through the openings.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning.
- Avoid eating, drinking and smoking nearby.

A.2.2 Cleaning Tools

Some components may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use for cleaning.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol should be used.
- ***Using solvents*** – The use of solvents is not recommended as they may damage the plastic parts.
- ***Vacuum cleaner*** – Using a vacuum specifically designed for computers is one of the best methods of cleaning. Dust and dirt can restrict the airflow and cause circuitry to corrode
- ***Cotton swabs*** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- ***Foam swabs*** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

B

BIOS Options

Below is a list of BIOS configuration options in the BIOS chapter.

System Overview **70**
System Time [xx:xx:xx] **71**
System Date [xx/xx/xx] **71**
SATA#1 Configurations [Compatible] **73**
Configure SATA as [IDE] **74**
IDE Master and IDE Slave **74**
Auto-Detected Drive Parameters **75**
Type [Auto] **76**
ZIP **76**
LS-120 ..... **76**
LBA/Large Mode [Auto] **76**
Block (Multi Sector Transfer) [Auto] **77**
PIO Mode [Auto] **77**
DMA Mode [Auto] **77**
S.M.A.R.T [Auto] **78**
32Bit Data Transfer [Enabled] **79**
Serial Port1 Address [3F8/IRQ4] **80**
Serial Port2 Address [2F8/IRQ3] **80**
Serial Port3 Address [3E8] **80**
Serial Port3 IRQ [10] **80**
Select RS232 or RS422/RS485 [RS232] **81**
Serial Port4 Address [2E8] **81**
Serial Port4 IRQ [10] **81**
FAN Mode Setting [Full On Mode] **82**
CPU Temp. Limit of OFF [000] **83**
CPU Temp. Limit of On [020] **84**
CPU Fan Start PWM [070] **84**
Slope PWM [0.5 PWM] **84**
AHCI Port n [Not Detected] **86**
SATA Port n [Auto] **87**
S.M.A.R.T [Enabled] **87**
Remote Access [Disabled] **88**
Serial Port Number **88**

Serial Port Mode 88
Redirection after BIOS POST 88
Terminal Type 88
Serial Port Number [COM1] 89
Base Address, IRQ [3F8h,4] 89
Serial Port Mode [115200 8,n,1] 89
Redirection After BIOS POST [Always] 89
Terminal Type [ANSI] 90
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USB 2.0 Controller [Enabled] 91
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DMA Channel# [Available] 94
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GbE LAN Boot [Disabled] 97
Change Supervisor Password 98
Change User Password 98
Memory Hole [Disabled] 100
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Boot Display Device [Auto] 101
Flat Panel Type [BY HARDWARE] 101
HDA Controller [Enabled] 102
Spread Spectrum Mode [Disabled] 102
Restore on AC Power Loss [Last State] 103
Save Changes and Exit 103
Discard Changes and Exit 103
Discard Changes 104
Load Optimal Defaults 104
Load Failsafe Defaults 104

Appendix

C

One Key Recovery

C.1 One Key Recovery Introduction

The IEI one key recovery is an easy-to-use front end for the Norton Ghost system backup and recovery tool. The one key recovery provides quick and easy shortcuts for creating a backup and reverting to that backup or for reverting to the factory default settings.

The IEI One Key Recovery tool menu is shown below.

Figure C-1: IEI One Key Recovery Tool Menu

Prior to using the IEI One Key Recovery tool (as shown in **Figure C-1**) to backup or restore Windows system, five setup procedures are required.

1. Hardware and BIOS setup (see **Section C.2.1**)
2. Create partitions (see **Section C.2.2**)
3. Install operating system, drivers and system applications (see **Section C.2.3**)
4. Build-up recovery partition (see **Section C.2.4**)
5. Create factory default image (see **Section C.2.5**)

After completing the five initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. The detailed information of each function is described in **Section C.4**.

NOTE:

The initial setup procedures for Linux system are described in **Section C.3**.

C.1.1 System Requirement

NOTE:

The recovery CD can only be used with IEI products. The software will fail to run and a warning message will appear when used on non-IEI hardware.

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

The partition created for recovery images must be big enough to contain both the factory default image and the user backup image. The size must be calculated before creating the partitions. Please take the following table as a reference when calculating the size of the partition.

	OS	OS Image after Ghost	Compression Ratio
Windows® 7	7 GB	5 GB	70%
Windows® XPE	776 MB	560 MB	70%
Windows® CE 6.0	36 MB	28 MB	77%

NOTE:

Specialized tools are required to change the partition size if the operating system is already installed.

C.1.2 Supported Operating System

The recovery CD is compatible with both Microsoft Windows and Linux operating system (OS). The supported OS versions are listed below.

- Microsoft Windows
  - Windows XP (Service Pack 2 or 3 required)
  - Windows Vista
  - Windows 7
  - Windows CE 5.0
  - Windows CE 6.0
  - Windows XP Embedded
- Linux
  - Fedora Core 12 (Constantine)
  - Fedora Core 11 (Leonidas)
  - Fedora Core 10 (Cambridge)
  - Fedora Core 8 (Werewolf)
  - Fedora Core 7 (Moonshine)
  - RedHat RHEL-5.4
  - RedHat 9 (Ghirke)
  - Ubuntu 8.10 (Intrepid)
  - Ubuntu 7.10 (Gutsy)
  - Ubuntu 6.10 (Edgy)
  - Debian 5.0 (Lenny)
  - Debian 4.0 (Etch)
  - SuSe 11.2
  - SuSe 10.3

NOTE:

Installing unsupported OS versions may cause the recovery tool to fail.

C.2 Setup Procedure for Windows

Prior to using the recovery tool to backup or restore Windows system, a few setup procedures are required.

Step 1: Hardware and BIOS setup (see **Section C.2.1**)

Step 2: Create partitions (see **Section C.2.2**)

Step 3: Install operating system, drivers and system applications (see **Section C.2.3**)

Step 4: Build-up recovery partition (see **Section C.2.4**)

Step 5: Create factory default image (see **Section C.2.5**)

The detailed descriptions are described in the following sections.

NOTE:

The setup procedures described below are for Microsoft Windows operating system users. For Linux system, most setup procedures are the same with Microsoft Windows except for several steps described in **Section C.3**.

C.2.1 Hardware and BIOS Setup

Step 1: Make sure the system is powered off and unplugged.

Step 2: Install a hard drive or SSD in the system. An unformatted and unpartitioned disk is recommended.

Step 3: Connect an optical disk drive to the system and insert the recovery CD.

Step 4: Turn on the system.

Step 5: Press the <**DELETE**> key as soon as the system is turned on to enter the BIOS.

Step 6: Select the connected optical disk drive as the 1st boot device. (**Boot → Boot Device Priority → 1st Boot Device**).

Step 7: Save changes and restart the computer. Continue to the next section for instructions on partitioning the internal storage.

C.2.2 Create Partitions

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

Step 1: Put the recovery CD in the optical drive of the system.

Step 2: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

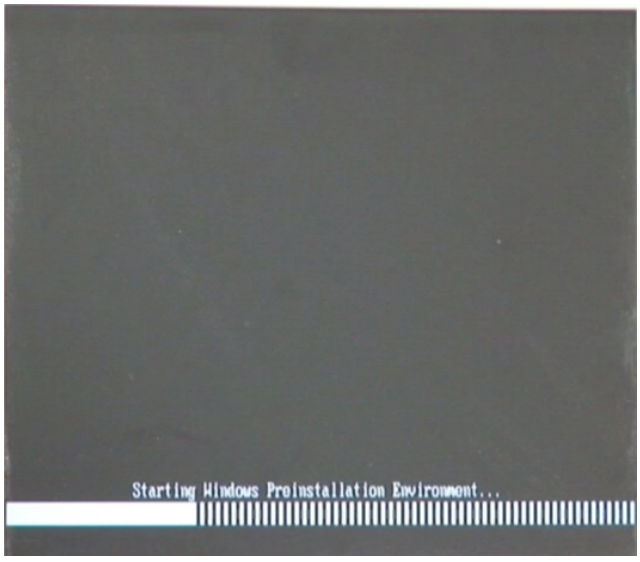


Figure C-2: Launching the Recovery Tool

Step 3: The recovery tool setup menu is shown as below.

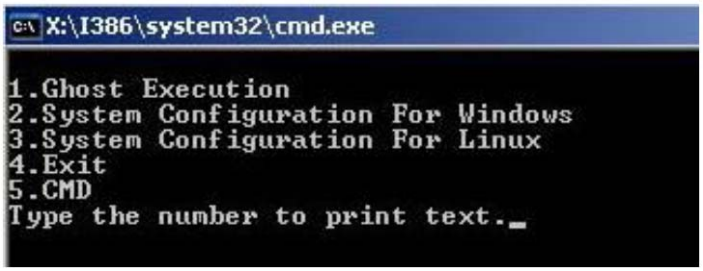


Figure C-3: Recovery Tool Setup Menu

Step 4: Press <**5**> then <Enter>.

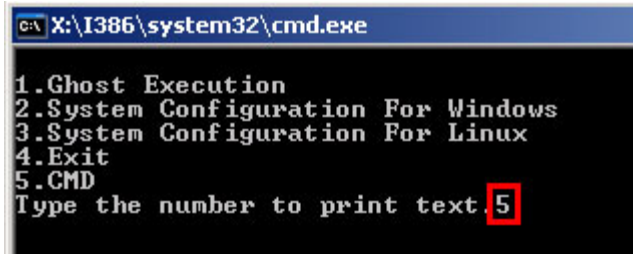


Figure C-4: Command Mode

Step 5: The command prompt window appears. Type the following commands (marked in red) to create two partitions. One is for the OS installation; the other is for saving recovery files and images which will be an invisible partition.

(Press <Enter> after entering each line below)

system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ___

DISKPART>assign letter=N

DISKPART>create part pri size= ___

DISKPART>assign letter=F

DISKPART>exit

system32>format N: /fs:ntfs /q /y

system32>format F: /fs:ntfs /q /v:Recovery /y

system32>exit

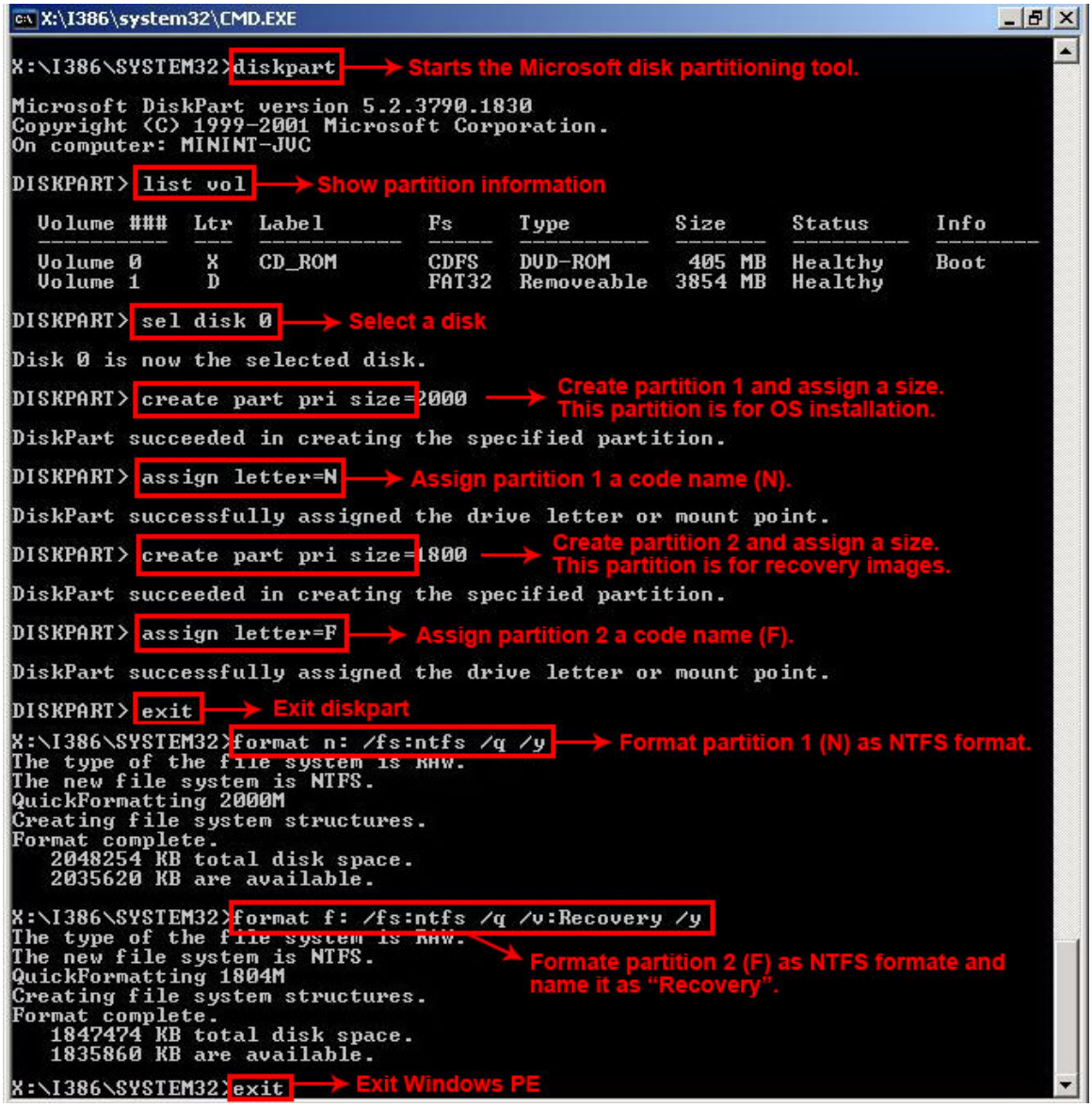
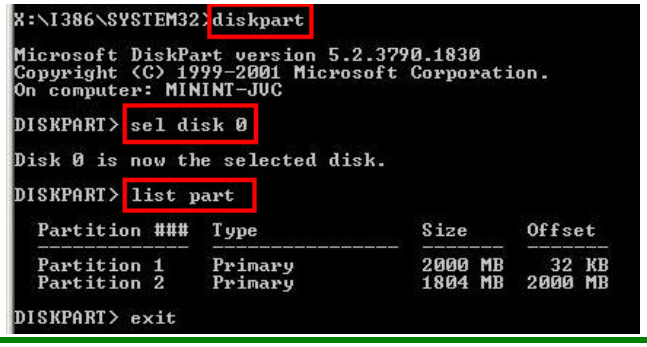

X:\I386\system32\CMD.EXE
X:\I386\SYSTEM32>diskpart
Starts the Microsoft disk partitioning tool.
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JVC
DISKPART> list vol
Show partition information
Volume ### Ltr Label Fs Type Size Status Info
Volume 0 X CD_ROM CDFS DVD-ROM 405 MB Healthy Boot
Volume 1 D FAT32 Removeable 3854 MB Healthy
DISKPART> sel disk 0
Select a disk
Disk 0 is now the selected disk.
DISKPART> create part pri size=2000
Create partition 1 and assign a size.
This partition is for OS installation.
DiskPart succeeded in creating the specified partition.
DISKPART> assign letter=N
Assign partition 1 a code name (N).
DiskPart successfully assigned the drive letter or mount point.
DISKPART> create part pri size=1800
Create partition 2 and assign a size.
This partition is for recovery images.
DiskPart succeeded in creating the specified partition.
DISKPART> assign letter=F
Assign partition 2 a code name (F).
DiskPart successfully assigned the drive letter or mount point.
DISKPART> exit
Exit diskpart
X:\I386\SYSTEM32>format n: /fs:ntfs /q /y
Format partition 1 (N) as NTFS format.
The type of the file system is RAW.
The new file system is NTFS.
QuickFormatting 2000M
Creating file system structures.
Format complete.
2048254 KB total disk space.
2035620 KB are available.
X:\I386\SYSTEM32>format f: /fs:ntfs /q /v:Recovery /y
The type of the file system is RAW.
The new file system is NTFS.
QuickFormatting 1804M
Creating file system structures.
Format complete.
1847474 KB total disk space.
1835860 KB are available.
Formate partition 2 (F) as NTFS formate and
name it as "Recovery".
X:\I386\SYSTEM32>exit
Exit Windows PE

Figure C-5: Partition Creation Commands

NOTE:

Use the following commands to check if the partitions were created successfully.


X:\I386\SYSTEM32>diskpart
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JVC
DISKPART> sel disk 0
Disk 0 is now the selected disk.
DISKPART> list part
Partition ### Type Size Offset
Partition 1 Primary 2000 MB 32 KB
Partition 2 Primary 1804 MB 2000 MB
DISKPART> exit

Step 6: Press any key to exit the recovery tool and automatically reboot the system.

Please continue to the following procedure: Build-up Recovery Partition.

C.2.3 Install Operating System, Drivers and Applications

Install the operating system onto the unlabelled partition. The partition labeled as "Recovery" is for use by the system recovery tool and should not be used for installing the operating system or any applications.

NOTE:

The operating system installation program may offer to reformat the chosen partition. DO NOT format the partition again. The partition has already been formatted and is ready for installing the new operating system.

To install the operating system, insert the operating system installation CD into the optical drive. Restart the computer and follow the installation instructions.

C.2.4 Build-up Recovery Partition

Step 1: Put the recover CD in the optical drive.

Step 2: Start the system.

Step 3: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

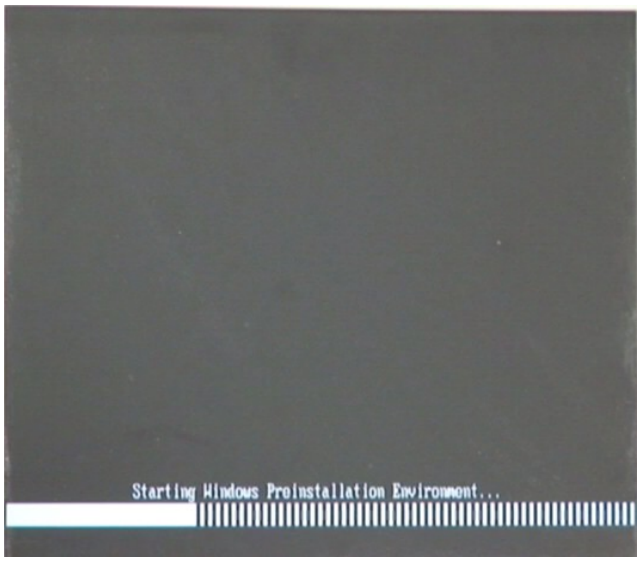


Figure C-6: Launching the Recovery Tool

Step 4: When the recovery tool setup menu appears, press <**2**> then <Enter>.

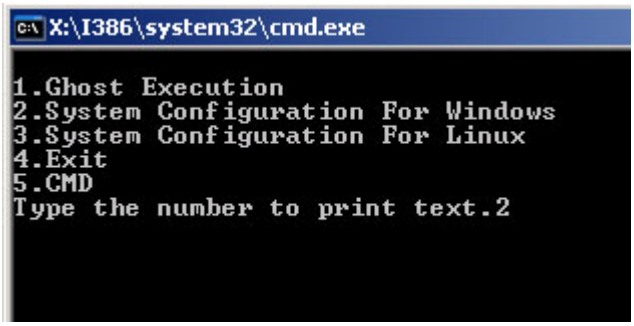


Figure C-7: System Configuration for Windows

Step 5: The Symantec Ghost window appears and starts configuring the system to build-up a recovery partition. In this process, the partition which is created for recovery files in **Section C.2.2** is hidden and the recovery tool is saved in this partition.

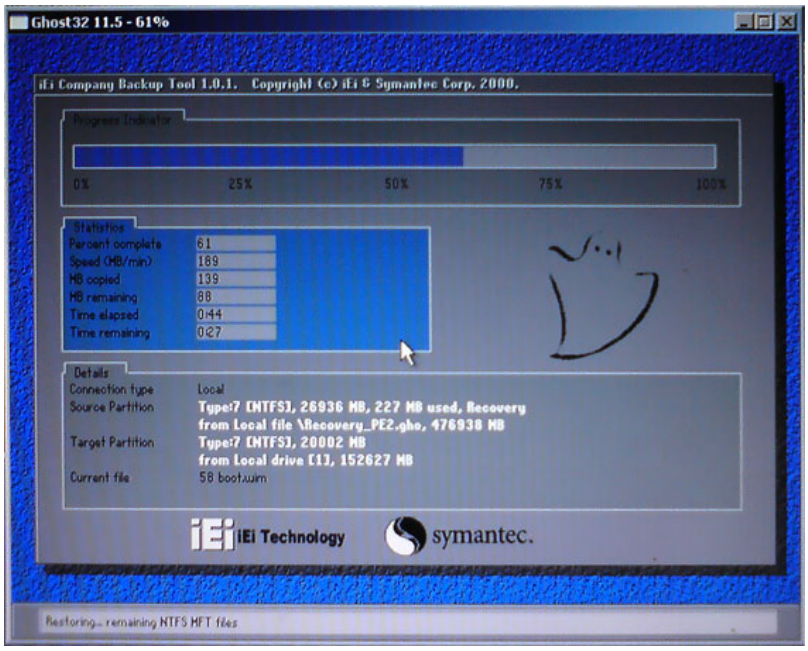


Figure C-8: Build-up Recovery Partition

Step 6: After completing the system configuration, press any key in the following window to reboot the system.

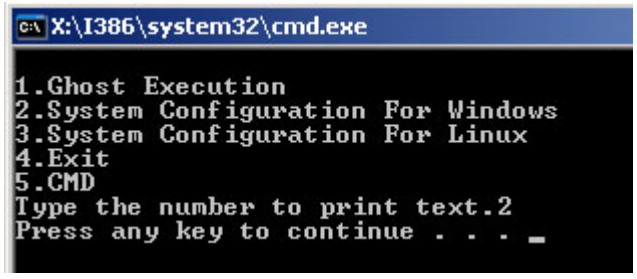


Figure C-9: Press any key to continue

Step 7: Eject the recovery CD.

C.2.5 Create Factory Default Image

NOTE:

Before creating the factory default image, please configure the system to a factory default environment, including driver and application installations.

To create a factory default image, please follow the steps below.

Step 1: Turn on the system. When the following screen displays (**Figure C-10**), press the <**F3**> key to access the recovery tool. The message will display for 10 seconds, please press F3 before the system boots into the operating system.

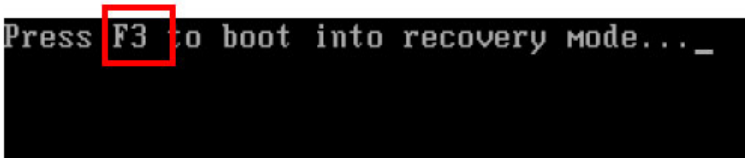


Figure C-10: Press F3 to Boot into Recovery Mode

Step 2: The recovery tool menu appears. Type <**4**> and press <**Enter**>. (**Figure C-11**)

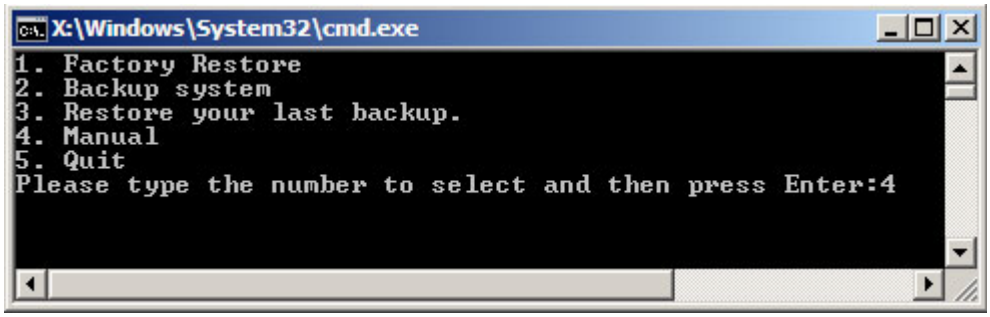


Figure C-11: Recovery Tool Menu

Step 3: The About Symantec Ghost window appears. Click **OK** button to continue.

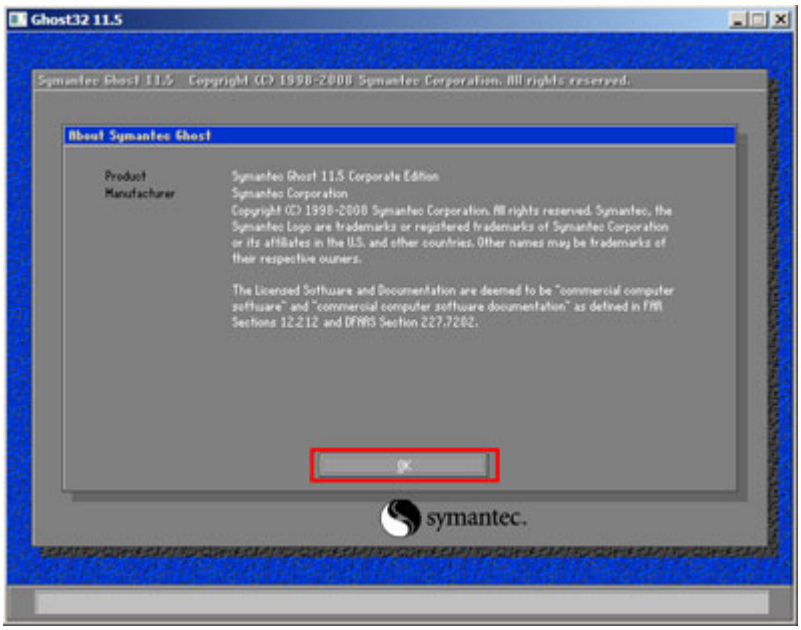


Figure C-12: About Symantec Ghost Window

Step 4: Use mouse to navigate to the option shown below (**Figure C-13**).

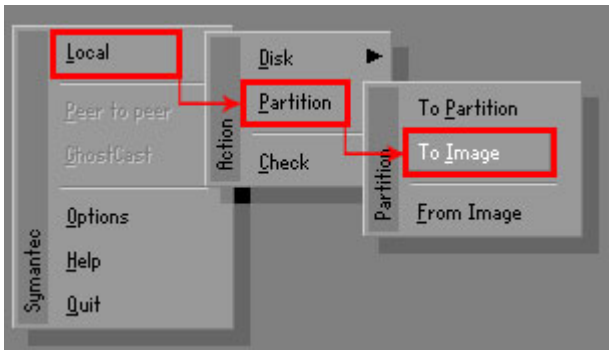


Figure C-13: Symantec Ghost Path

Step 5: Select the local source drive (Drive 1) as shown in **Figure C-14**. Then click OK.

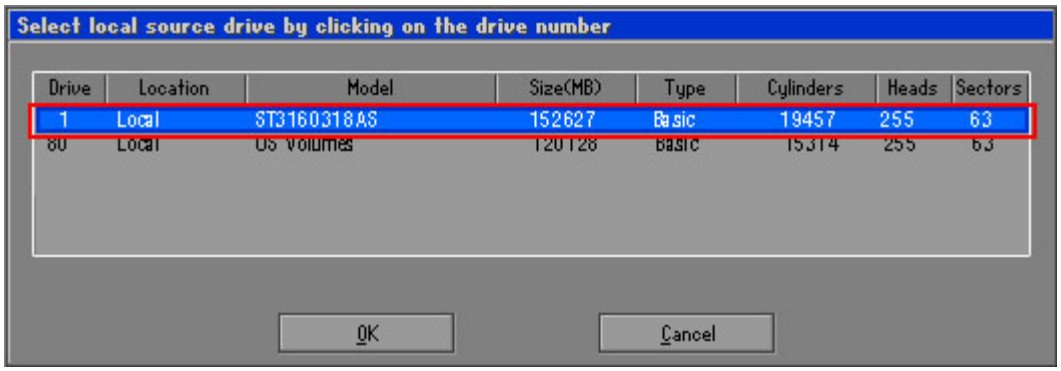


Figure C-14: Select a Local Source Drive

Step 6: Select a source partition (Part 1) from basic drive as shown in **Figure C-15**. Then click OK.

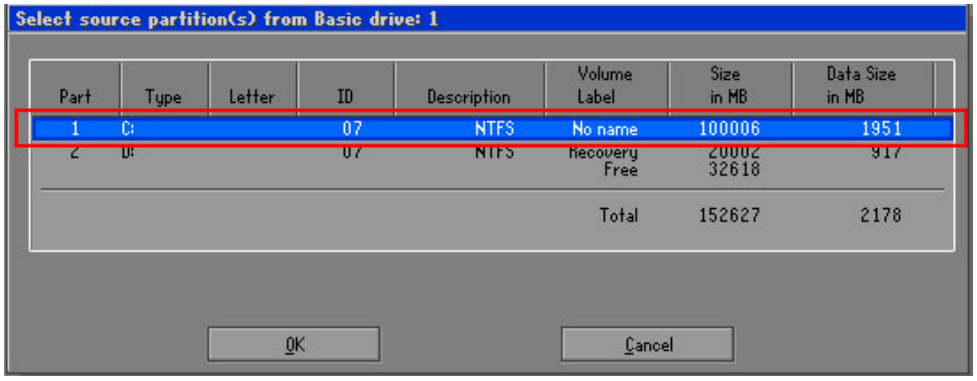


Figure C-15: Select a Source Partition from Basic Drive

Step 7: Select **1.2: [Recovery] NTFS drive** and enter a file name called **iei** (**Figure C-16**). Click **Save**. The factory default image will then be saved in the selected recovery drive and named IEI.GHO.

WARNING:

The file name of the factory default image must be **iei.GHO**.

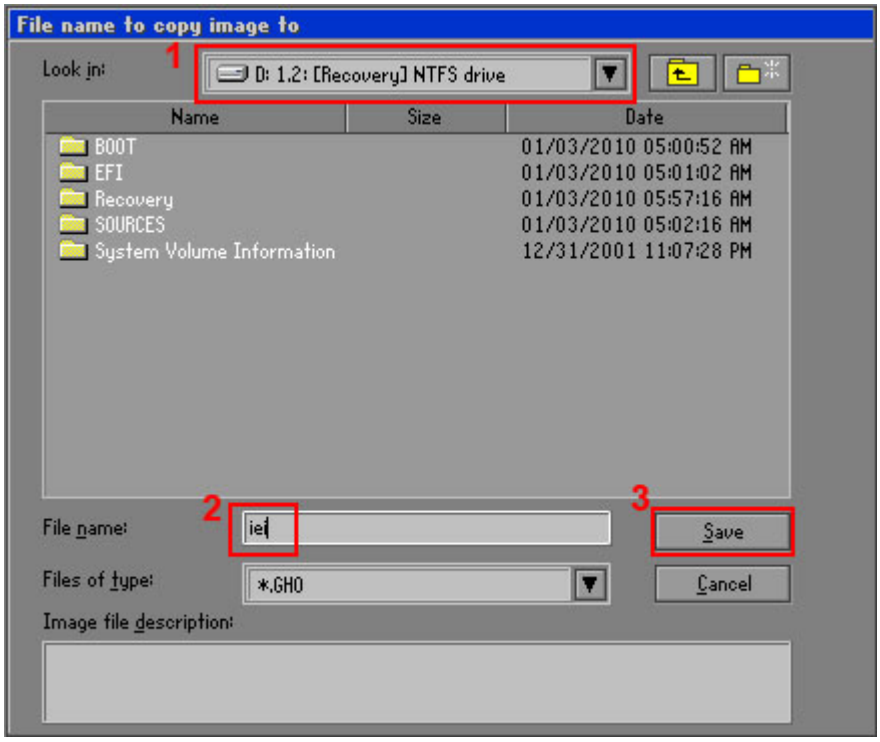


Figure C-16: File Name to Copy Image to

Step 8: When the Compress Image screen in **Figure C-17** prompts, click **High** to make the image file smaller.

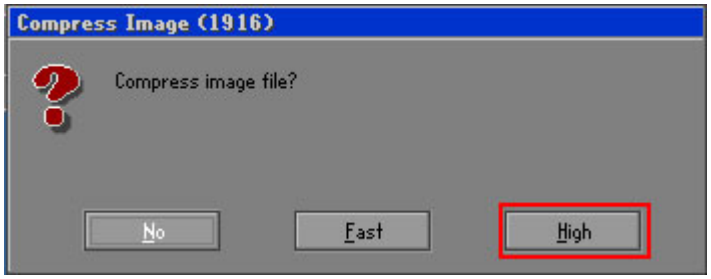


Figure C-17: Compress Image

Step 9: The Proceed with partition image creation window appears, click **Yes** to continue.

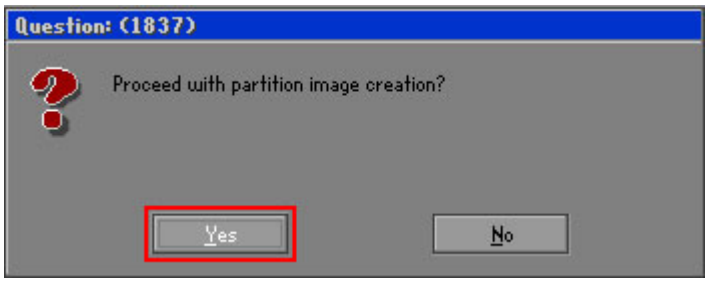


Figure C-18: Image Creation Confirmation

Step 10: The Symantec Ghost starts to create the factory default image (**Figure C-19**).

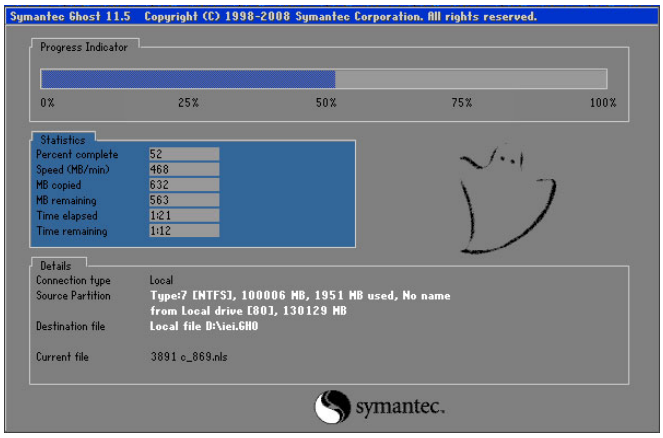


Figure C-19: Image Creation Process

Step 11: When the image creation completes, a screen prompts as shown in **Figure C-20**. Click **Continue** and close the Ghost window to exit the program.

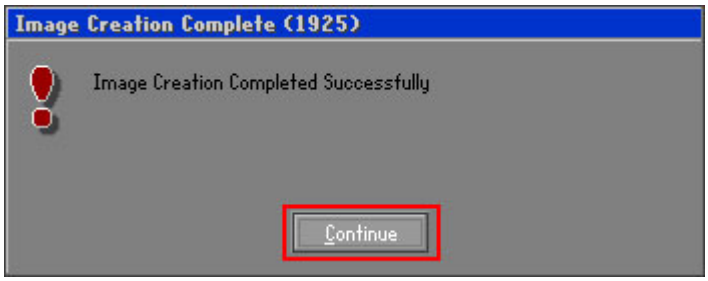


Figure C-20: Image Creation Complete

Step 12: The recovery tool main menu window is shown as below. Press any key to reboot the system.

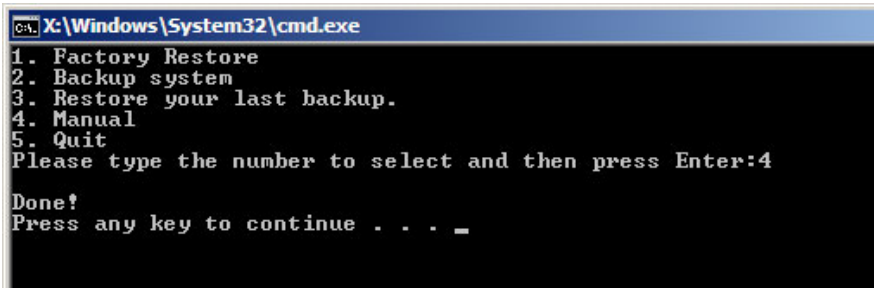


Figure C-21: Press Any Key to Continue

C.3 Setup Procedure for Linux

The initial setup procedures for a Linux system are mostly the same with the procedure for Microsoft Windows. Please follow the steps below to setup the recovery tool for Linux OS.

Step 1: **Hardware and BIOS setup**. Refer to **Section C.2.1**.

Step 2: **Install Linux operating system**. Make sure to install GRUB (v0.97 or earlier) MBR type and Ext3 partition type. Leave enough space on the hard drive to create the recover partition later.

NOTE:

If the Linux OS is not installed with GRUB (v0.97 or earlier) and Ext3, the Symantec Ghost may not function properly.

While installing Linux OS, please create two partitions:

- Partition 1: ***/***
- Partition 2: **SWAP**

NOTE:

Please reserve enough space for partition 3 for saving recovery images.

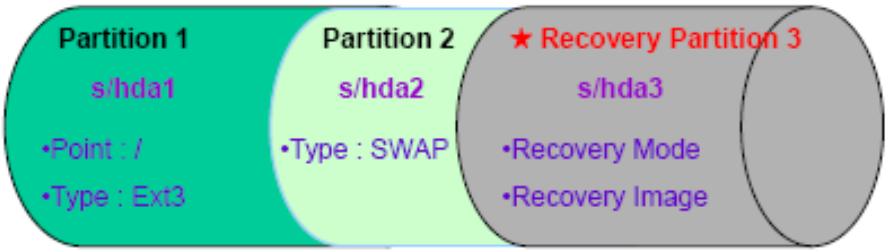


Figure C-22: Partitions for Linux

Step 3: **Create a recovery partition**. Insert the recovery CD into the optical disk drive. Follow **Step 1** ~ **Step 3** described in **Section C.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.

system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ___

DISKPART>assign letter=N

DISKPART>exit

system32>format N: /fs:ntfs /q /v:Recovery /y

system32>exit

Step 4: **Build-up recovery partition**. Press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient. When the recovery tool setup menu appears, type <**3**> and press <Enter> (**Figure C-23**). The Symantec Ghost window appears and starts configuring the system to build-up a

recovery partition. After completing the system configuration, press any key to reboot the system. Eject the recovery CD.

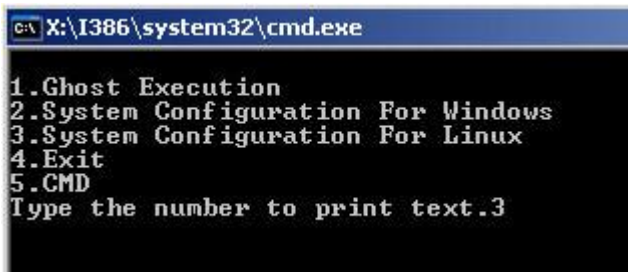


Figure C-23: System Configuration for Linux

Step 5: **Access the recovery tool main menu by modifying the "menu.lst"**. To first access the recovery tool main menu, the menu.lst must be modified. In Linux system, enter Administrator (root). When prompt appears, type:

cd /boot/grub

vi menu.lst

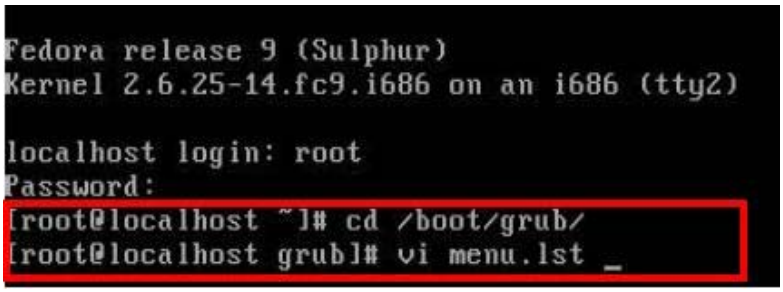
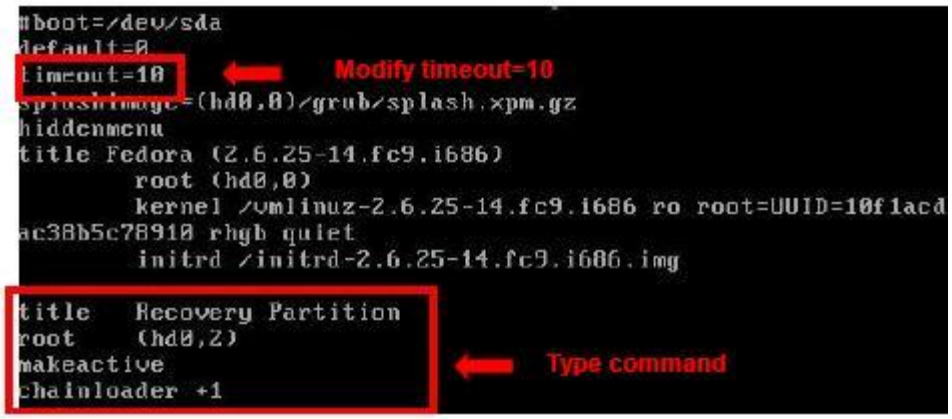


Figure C-24: Access menu.lst in Linux (Text Mode)

Step 6: Modify the menu.lst as shown below.



- Type command:

  title Recovery Partition

  root (hd0,2)

  makeactive

  chainloader +1

Step 7: The recovery tool menu appears. (**Figure C-25**)

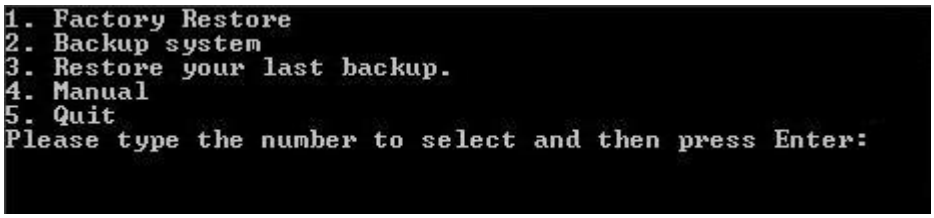

1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:

Figure C-25: Recovery Tool Menu

Step 8: **Create a factory default image**. Follow **Step 2** ~ **Step 12** described in **Section C.2.5** to create a factory default image.

C.4 Recovery Tool Functions

After completing the initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. The main menu of the recovery tool is shown below.

Figure C-26: Recovery Tool Main Menu

The recovery tool has several functions including:

1. **Factory Restore**: Restore the factory default image (iei.GHO) created in Section C.2.5.
2. **Backup system**: Create a system backup image (iei_user.GHO) which will be saved in the hidden partition.
3. **Restore your last backup**: Restore the last system backup image
4. **Manual**: Enter the Symantec Ghost window to configure manually.
5. **Quit**: Exit the recovery tool and restart the system.

WARNING:

Please do not turn off the system power during the process of system recovery or backup.

WARNING:

All data in the system will be deleted during the system recovery. Please backup the system files before restoring the system (either Factory Restore or Restore Backup).

C.4.1 Factory Restore

To restore the factory default image, please follow the steps below.

Step 9: Type <**1**> and press <**Enter**> in the main menu.

Step 10: The Symantec Ghost window appears and starts to restore the factory default. A factory default image called **iei.GHO** is created in the hidden Recovery partition.

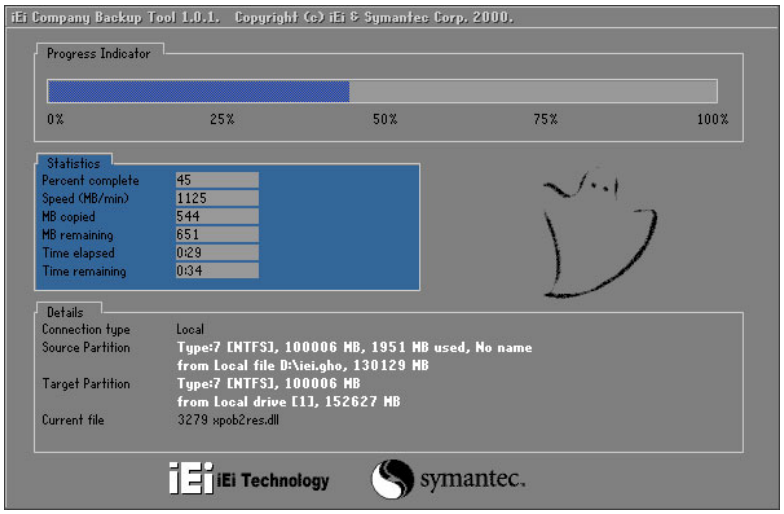


Figure C-27: Restore Factory Default

Step 11: The screen is shown as in **Figure C-28** when completed. Press any key to reboot the system.

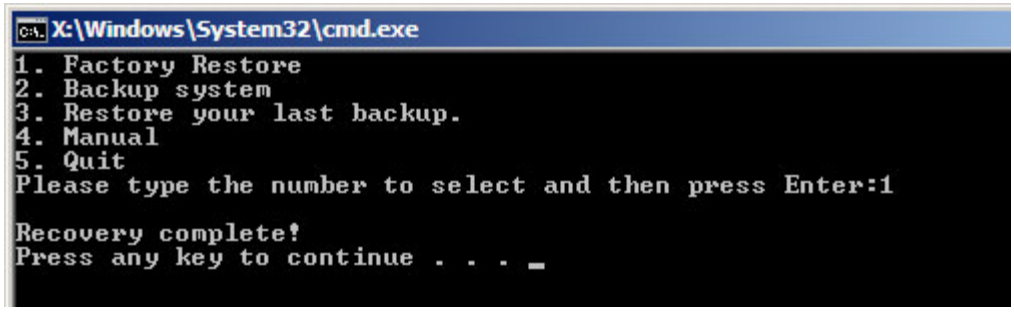

X:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:1
Recovery complete!
Press any key to continue . . .

Figure C-28: Recovery Complete Window

C.4.2 Backup System

To backup the system, please follow the steps below.

Step 12: Type <**2**> and press <**Enter**> in the main menu.

Step 13: The Symantec Ghost window appears and starts to backup the system. A backup image called **iei_user.GHO** is created in the hidden Recovery partition.

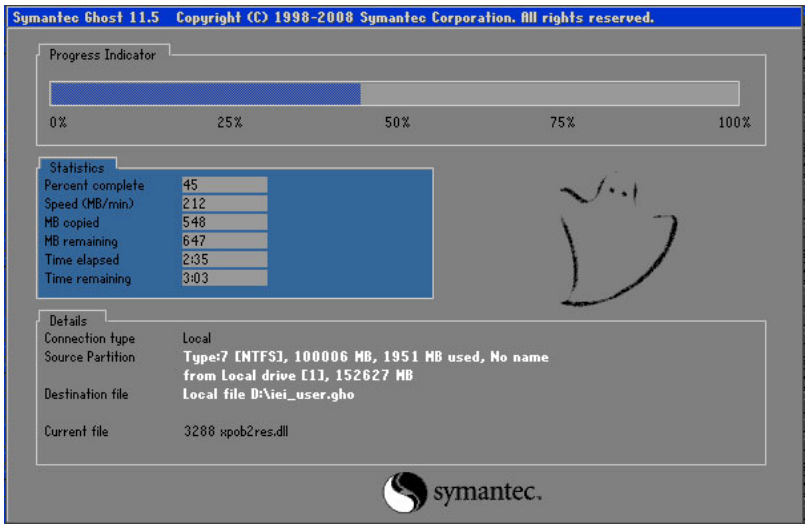


Figure C-29: Backup System

Step 14: The screen is shown as in **Figure C-30** when system backup is completed. Press any key to reboot the system.

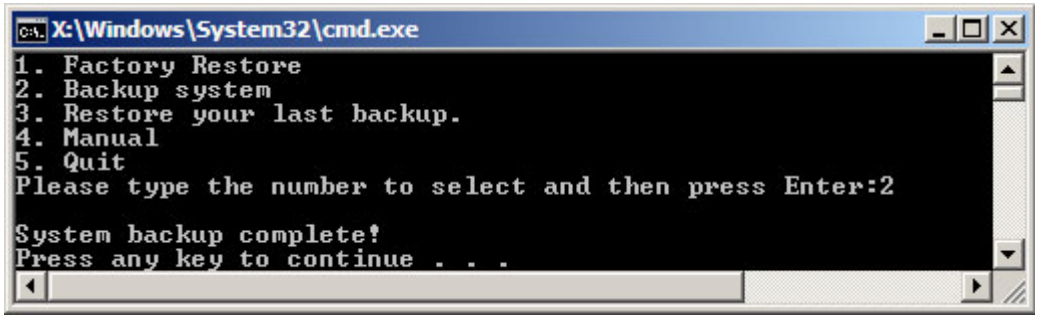

X:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:2
System backup complete!
Press any key to continue . . .

Figure C-30: System Backup Complete Window

C.4.3 Restore Your Last Backup

To restore the last system backup, please follow the steps below.

Step 15: Type <**3**> and press <**Enter**> in the main menu.

Step 16: The Symantec Ghost window appears and starts to restore the last backup image (iei_user.GHO).

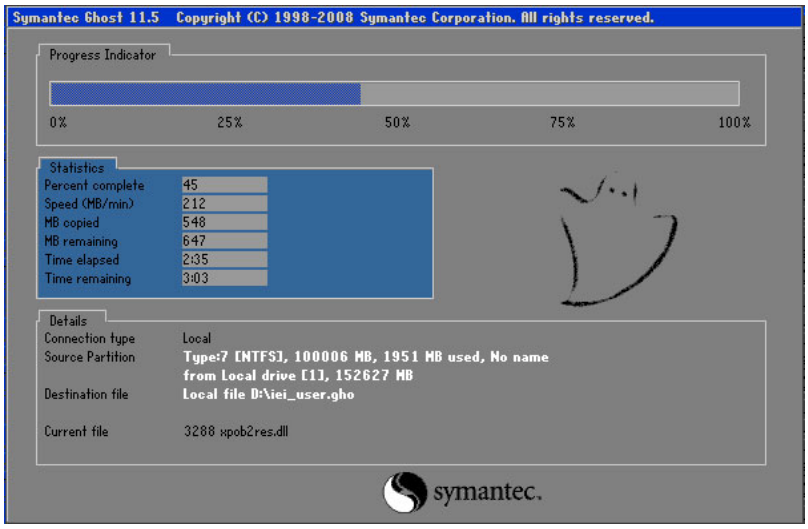


Figure C-31: Restore Backup

Step 17: The screen is shown as in **Figure C-32** when backup recovery is completed. Press any key to reboot the system.

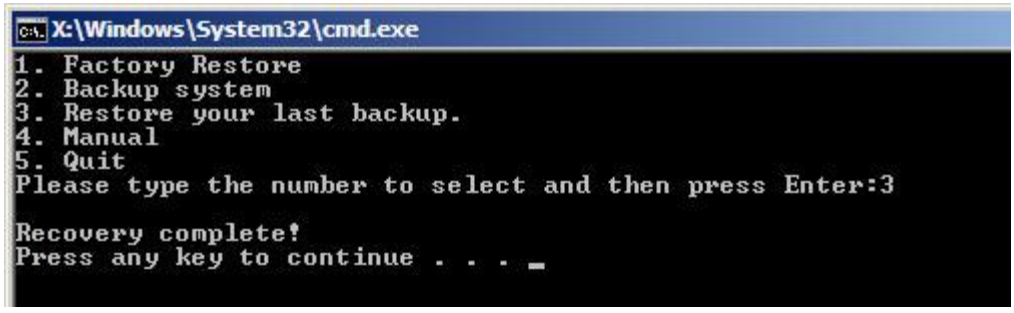

X:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:3
Recovery complete!
Press any key to continue . . .

Figure C-32: Restore System Backup Complete Window

C.4.4 Manual

To restore the last system backup, please follow the steps below.

Step 18: Type <**4**> and press <**Enter**> in the main menu.

Step 19: The Symantec Ghost window appears. Use the Ghost program to backup or recover the system manually.

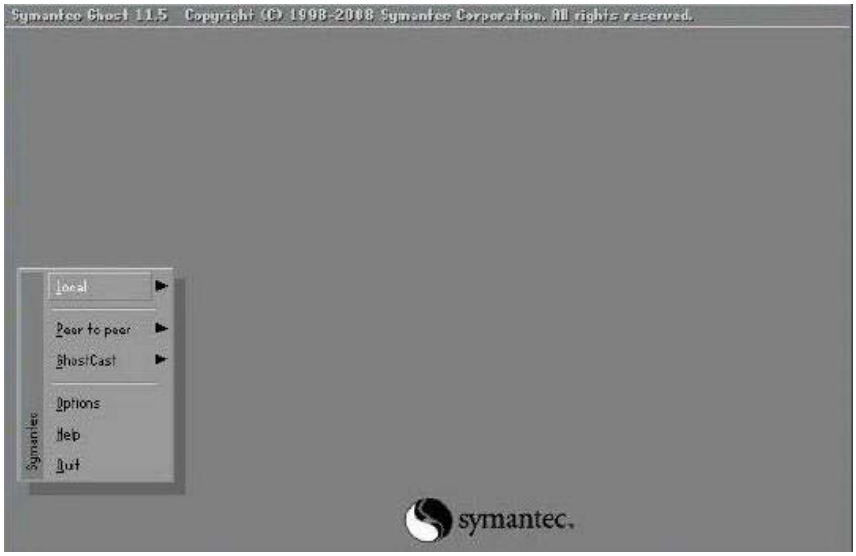


Figure C-33: Symantec Ghost Window

Step 20: When backup or recovery is completed, press any key to reboot the system.

C.5 Other Information

C.5.1 Using AHCI Mode or ALi M5283 / VIA VT6421A Controller

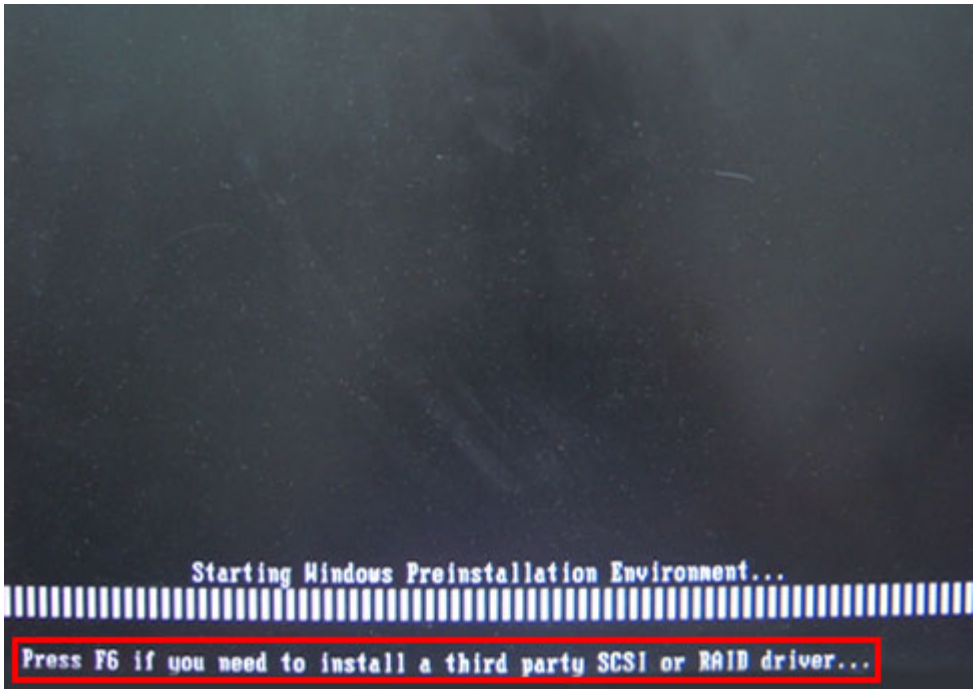
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

Step 1: Copy the SATA RAID/AHCI driver to a floppy disk and insert the floppy disk into a USB floppy disk drive. The SATA RAID/AHCI driver must be especially designed for the on-board SATA controller.

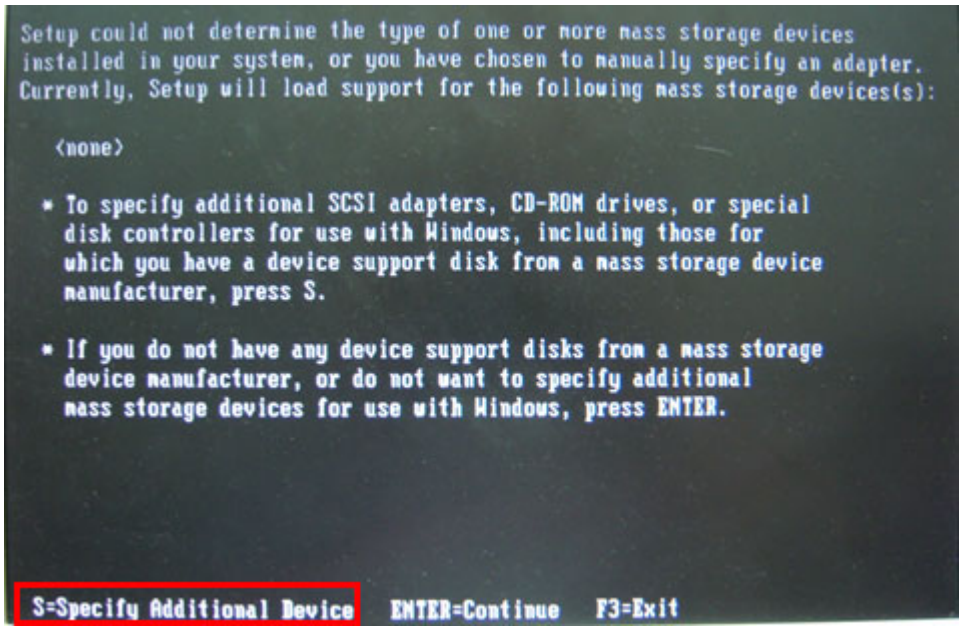
Step 2: Connect the USB floppy disk drive to the system.

Step 3: Insert the One Key Recovery CD into the system and boot the system from the CD.

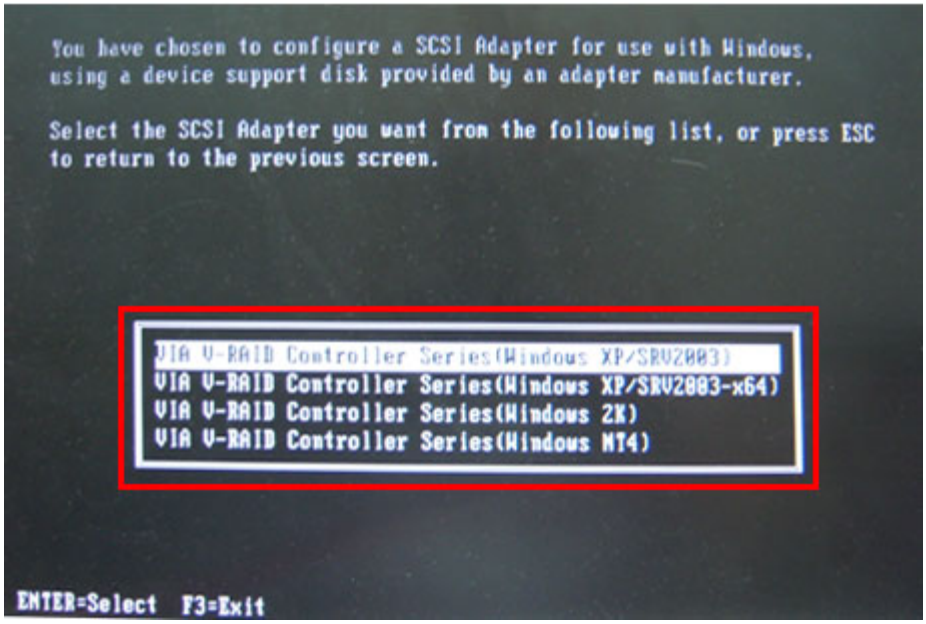
Step 4: When launching the recovery tool, press <**F6**>.



Step 5: When the following window appears, press <**S**> to select “Specify Additional Device”.


Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices(s):
<none>
* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Windows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.
S=Specify Additional Device
ENTER=Continue
F3=Exit

Step 6: In the following window, select a SATA controller mode used in the system. Then press <**Enter**>. The user can now start using the SATA HDD.


You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer.
Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen.
VIA V-RAID Controller Series(Windows XP/SRV2003)
VIA V-RAID Controller Series(Windows XP/SRV2003-x64)
VIA V-RAID Controller Series(Windows 2K)
VIA V-RAID Controller Series(Windows NT4)
ENTER=Select
F3=Exit

Step 7: After pressing <Enter>, the system will get into the recovery tool setup menu. Continue to follow the setup procedure from **Step 4** in **Section C.2.2 Create Partitions** to finish the whole setup process.

C.5.2 System Memory Requirement

To be able to access the recovery tool by pressing <**F3**> while booting up the system, please make sure to have enough system memory. The minimum memory requirement is listed below.

- **Using Award BIOS**: 128 MB system memory
- **Using AMI BIOS**: 512 MB system memory.

Appendix

D

Terminology

AC '97	Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.
ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
ASKIR	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude ("volume") of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
BIOS	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CompactFlash®	CompactFlash® is a solid-state storage device. CompactFlash® devices use flash memory in a standard size enclosure. Type II is thicker than Type I, but a Type II slot can support both types.
CMOS	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
COM	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector.
DAC	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
DDR	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.

DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.
DIMM	Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.
DIO	The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
EIDE	Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps.
EIST	Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage.
FSB	The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.
GbE	Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.
GPIO	General purpose input
HDD	Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.
ICH	The Input/Ouput Control Hub (ICH) is an Intel® Southbridge chipset.
IrDA	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
L1 Cache	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.
L2 Cache	The Level 2 Cache (L2 Cache) is an external processor memory cache.

LCD	Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.
LVDS	Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
RAM	Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
SATA	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA II bus has data transfer speeds of up to 3.0 Gbps.
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
UART	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.
UHCI	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
USB	The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates and USB 2.0 supports 480Mbps data transfer rates.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

E

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table E-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT     15H
;
; ADD THE APPLICATION PROGRAM HERE
;
        CMP     EXIT_AP, 1      ;is the application over?
        JNE     W_LOOP          ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT     15H
;
; EXIT ;
```

Appendix

F

Hazardous Materials Disclosure

F.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。						